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Manufacturing milk producers in Henry County, Tennessee : Problem A: Characteristics of Henry County manufacturing milk producers and their farms : Problem B: Management practices of Henry County manufacturing milk producers : Problem C: Factors influencing dairy management practice adoption by Henry County manufacturing milk producers : three related special problems in lieu of thesis /

John W. F. Caldwell
University of Tennessee

To the Graduate Council:

I am submitting herewith a thesis written by John W. F. Caldwell entitled "Manufacturing milk producers in Henry County, Tennessee : Problem A: Characteristics of Henry County manufacturing milk producers and their farms : Problem B: Management practices of Henry County manufacturing milk producers : Problem C: Factors influencing dairy management practice adoption by Henry County manufacturing milk producers : three related special problems in lieu of thesis /." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.

Robert S. Dotson, Major Professor

We have read this thesis and recommend its acceptance:

Lewis Dickson, Don O. Richardson

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

May 18, 1966

To the Graduate Council:

I am submitting herewith three related problems in lieu of thesis written by John W. F. Caldwell entitled: "Problem A: Characteristics of Henry County Manufacturing Milk Producers and Their Farms; Problem B: Management Practices of Henry County Manufacturing Milk Producers, and Problem C: Factors Influencing Dairy Management Practice Adoption by Henry County Manufacturing Milk Producers." I recommend that they be accepted for nine quarter hours credit in partial fulfillment of the requirements for the degree of Master of Science, with a Major in Agricultural Extension.

Robert L. Sutton
Major Professor

We have read these problems
and recommend their acceptance:

Lewis N. Dickson

Don O. Richardson

_____

_____

Accepted for the Council:

_____
Dean of the Graduate School

MANUFACTURING MILK PRODUCERS IN HENRY COUNTY, TENNESSEE:

PROBLEM A: CHARACTERISTICS OF HENRY COUNTY MANUFACTURING MILK PRODUCERS AND THEIR FARMS

PROBLEM B: MANAGEMENT PRACTICES OF HENRY COUNTY MANUFACTURING MILK PRODUCERS

PROBLEM C: FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION BY HENRY COUNTY MANUFACTURING MILK PRODUCERS

Three Related Special Problems in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

John W. F. Caldwell

June 1966

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CHARACTERISTICS OF HENRY COUNTY MANUFACTURING MILK PRODUCERS AND THEIR FARMS

A Special Problem in Lieu of Thesis

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CHAPTER I

INTRODUCTION

I. THE SITUATION AND NEED FOR THE STUDY

In the four year period, 1962-65, dairying ranked third in importance as a source of agricultural income in Tennessee (20:1).* Annual receipts averaged about 85 million dollars for the period of 1961-65. Also, there were approximately 444,000 dairy cows in Tennessee in 1965. Average milk production per Tennessee cow that year was only 5,000 pounds, while the average American cow was producing 8,080 pounds (18:1). Some research (19:1) suggests that manufacturing milk production per cow of less than 5,500 pounds is unprofitable, and that cows producing below that amount should be culled and replaced.

Henry County is located in the northeast corner of the Western Division of Tennessee. It is bordered on the north by the state of Kentucky, on the east by the Tennessee River and by Benton County. The south boundary is with Carroll County and the west boundary with Weakley County. The agriculture of the county is rather diversified, a little more than one-half of the agricultural income coming from the sale of livestock products and a little under one-half coming from the sale of

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*Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

crops. Dairying ranks third in importance and is exceeded only in dollar value by the sale of cattle and calves and by crops (5:217).

Manufacturing milk production started on the increase in 1950 when Pet Milk Company located a buying plant at Paris, Tennessee. Three field men were assigned to Henry and six surrounding counties to establish routes and work with producers on recommended management practices leading to high production.

This plant reached a high of 1,385 patrons during 1954. The counties of Benton, Carroll, Decatur, Henderson, Stewart, and Calloway furnished about one-third of these producers according to Pet Milk records. There was a decline of 813 Henry County producers in the period from 1954-65. The decline was due partially to the increase in production of Grade A milk from 23 producers in 1955 to 75 by 1963 (17:2). During that period two buyers began purchasing milk in the county, namely Ryan Milk Company and Sealtest where previously only the plant operated by Paris Dairy Company was buying Grade A milk in Henry County.

Another factor causing a decline was the increase in employment opportunities for farm people provided by Holly Carburetor, Clippard Instrument and other industries coming into the county, which caused many of them to eventually quit milking cows.

Weakley County Dairy purchases milk from 22 producers along the western edge of the county, which is used partly for Grade A and partly for manufacturing. This market became available in 1958, and has continued to the present.

Problems identified in the Annual Project III Plan of Work for Fiscal Year 1965 included the following: 1) there is lack of an adequate supply of quality feed (especially hay and silage); 2) too few dairymen are using artifical breeding; 3) most dairymen in Tennessee do not keep adequate records; 4) many housing and milking facilities are inadequate and/or inefficient; 5) mastitis continues to be a common disease in dairy herds throughout the State; and 6) use of too much or too little insecticide in the control of flies and other insect pests poses problems of high bacterial counts and/or contamination. The basis for identification of the foregoing problem has mainly been that of observation of the county Extension staff members. Judging by the lack of available literature, further research needs to be done in selected counties to try to ascertain which recommended production and management practices manufacturing milk producers are using and why they are and are not using them. Based on such knowledge, educational plans should be developed for use in teaching dairymen to do a better job in the management of their herds in order to receive increased net returns per cow and per herd (17:2).

It is anticipated that further Extension plans in the county will include coordination of promising ways identified by this study for increasing Henry County milk production to a more profitable level with emphasis on increased net returns for the manufacturing milk producers.

II. THE PURPOSE OF THE STUDY

This specific study, then was guided by the following purpose: to determine the characteristics of Henry County dairymen, and their farms, whose herds produced in high, middle, and low thirds in terms of average pounds of butterfat per cow in 1964.

III. REVIEW OF LITERATURE

Very limited information was available on the characteristics of manufacturing milk producers in Tennessee and their farms.

Based on data from a survey of 25 Tennessee plants purchasing manufacturing milk in 1961, Chappell (6:1) noted that producers shifting to elevated stalls from stables or no milking facilities increased milk production per cow an average of 12.2 percent by the end of the second year

Also, the addition of silage to dairy rations was shown to increase milk production a average of 14.5 percent over no silage. (Less than two percent of the herds having fewer than 10 cows were being fed silage.)

Ellmore (11:3) reported on a Virginia survey conducted in 1960. The 7,225 farms reporting represented 69 percent of the producers of manufacturing milk in the state. The total number of farms reporting milk cows decreased 40 percent from 1954 to 1960. The survey showed the average milk producer to be 50 years old, to have completed eight years of schooling, and to be milking seven cows with an average

production per cow of 5,700 pounds annually. Approximately one-fifth of the producers used milking machines, one-third used electric milk coolers and one out of seven used silos. Beef bulls were used for breeding 63 percent of the cows.

A 1964 study of 20 Grade A dairymen in Anderson County, Tennessee, by O'Neal (13:25) revealed that levels of milk production were related to the quality of the feed used and to the management ability of the producer.

Though not dealing specifically with manufacturing milk production Shearon (17:63), based on a 1963 survey of the 60 Grade A dairymen in Henry County found that they:

1. Averaged 51 years of age, those in the high butterfat production third being slightly younger than those in the low production third.

2. Had little over nine years formal education at all production levels.

3. Were generally known by the county agent, more high than low producers being known.

4. Had a receptive attitude toward the survey in all production groups.

5. Had an average gross family income of $19,339, high producers averaging almost double the income reported by the low.

6. Produced an average of 325 pounds of butterfat and 8,133 pounds of milk per cow, high producers having nearly twice the production recorded for the low.

7. Received the major share of their incomes from dairying.

8. Operated farms averaging 195 acres in size, high producers having larger farms than the low producers

9. Milked 31 cows, high producers milking an average of 34 and low 29.

10. Had an average of about three registered cows per herd.

11. Generally produced most of their replacement heifers.

12. Had a total median bacterial count of 16,000 -- the high recording less than one-half that for the low.

Shearon felt that educational programs planned to meet the needs of Henry County Grade A dairymen should consider the wide ranges found in educational level, the needs for motivation and attitude changes, radical age differences and extreme differences in facilities used by these dairymen. The similarities between the Shearon study and the present one will become obvious -- though differences between characteristics of Grade A and manufacturing milk producers might be expected.

IV. METHODS

For the purpose of this study the total population of 132 producers was randomly sampled, and 75 producers (57 percent) were selected for interview. The manufacturing milk producers were divided into three groups of 25 each according to the butterfat production per cow in 1964. Table I shows the groups and the actual range of butterfat production for each group.

TABLE I

NUMBERS OF HENRY COUNTY MANUFACTURING MILK PRODUCERS IN THE BUTTERFAT PRODUCTION GROUPS ACCORDING TO RANGES IN BUTTERFAT PRODUCTION PER COW BASED ON 1964 FIGURES

Average Per Cow Butterfat Production Group	Number of Producers Interviewed	Range of Butterfat Production Per Cow Within Groups (Pounds)
Low	25	77 lb. - 200 lb.
Medium	25	208 lb. - 260 lb.
High	25	261 lb. - 454 lb.
Total	75	77 lb. - 454 lb.

A copy of the survey schedule form is included in the Appendix. It was made up of 45 questions to be completed by personal interview. The average time spent with each respondent was approximately 45 minutes, seven surveys being the largest number completed in any one day. The local buyer of manufacturing milk (Pet Milk Company) furnished necessary information concerning pounds of milk sold, butterfat, and average bacterial count.

After the survey was completed, the interviewer answered eight judgement questions concerning the respondent. The questions related to the respondent's interest, attitude, rating with regard to the value and condition of the herd, and how well the interviewer knew the respondent.

The manufacturing milk producers ranged in average butterfat production per cow from 77 to 454 pounds with an average production of 243 pounds. Grade A producers in the same type of survey in Henry County a year earlier averaged 82 pounds higher with about the same variation in each of the three production thirds.

Analysis was made of data in simple numbers and percents, and main comparisons were made between high and low production groups.

CHAPTER II

FINDINGS

I. DEGREE TO WHICH INTERVIEWER KNEW MANUFACTURING MILK PRODUCERS

The interviewer was acquainted with more than one-third (35 percent) of the producers and knew them either very well or fairly well as shown in Table II. One-half of these producers were in the high production group.

Fifty-four percent (41 producers) were not very well known by the interviewer and apparently had had relatively little contact with county Extension personnel.

Eight producers were not known by the interviewer.

II. RESPONDENT'S ATTITUDE TOWARD THE SURVEY

Table III shows that the interviewer was well-received by 96 percent of the producers. Two were considered indifferent and one antagonistic; however, all cooperated by answering the questions. It was necessary to make it clear to some of the producers that the information would be kept confidential. The same relatively friendly attitude was reflected about equally by producers in the high, medium, and low production groups.

TABLE II

DEGREE TO WHICH INTERVIEWER KNEW ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Degree to Which Interviewer Knew Respondent	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Very Well	14	19	6	24	3	12	5	20
Fairly Well	12	16	7	28	1	4	4	16
Not Very Well	41	54	10	40	19	76	12	48
Not At All	8	11	2	8	2	8	4	16
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE III

INTERVIEWER'S ESTIMATE OF THE ATTITUDES OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS TOWARD THE SURVEY BY NUMBERS AND PERCENTS*

Attitude Toward the Survey	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Friendly	46	61	17	68	14	56	15	60
Somewhat Friendly	26	35	6	24	10	40	10	40
Indifferent	2	3	1	4	1	4	0	0
Antagonistic	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

III. EDUCATIONAL LEVELS

Table IV indicates that the educational level seemed to have some effect on the placings in the production groups. The average grade level for the entire group was 8.6 years. Less than one-half (46 percent) the producers had 9 or more years of schooling. When high and low producers were compared, it was found that 68 percent of the former and only 44 percent of the latter had nine or more years. The average grade level for the high producers was 9.6 years compared to 8.5 for the low producers.

IV. AGE GROUPS

Table V shows only one year difference in ages of the high and low groups (54 and 53 respectively). The medium producers average age of 46 was eight years younger than that of the high group. Therefore, it would seem that age did not appear to be a characteristic distinguishing between high and low production groups.

V. GROSS FAMILY INCOME

Gross family income averaged $4,945 for the 73 producers who answered this question as shown in Table VI. High producers averaged $5,480, while low producers who answered averaged $4,130.

Fifty-one percent of all those interviewed reported gross family incomes of $4,000 or more, more high producers (76 percent) being included

TABLE IV

EDUCATIONAL LEVELS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE EDUCATIONAL GRADE LEVELS*

Educational Grade Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	1	1	0	0	0	0	1	4
1-4 (elementary)	4	5	2	8	1	4	1	4
5-7	15	20	2	8	8	32	5	20
8	21	28	4	16	10	40	7	28
9-11	17	23	8	32	4	16	5	20
12	14	19	7	28	2	8	5	20
1-4 (college)	3	4	2	8	0	0	1	4
Total	75	100	25	100	25	100	25	100
Average Educational Level	8.6		9.6		7.8		8.5	

*Percents are rounded to the nearest whole number.

TABLE V

AGE GROUPS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE AGES*

Age Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Under 25	0	0	0	0	0	0	0	0
25 - 34	3	4	1	4	2	8	0	0
35 - 44	12	16	4	16	2	8	6	24
45 - 54	23	31	9	36	7	28	7	28
55 - 64	28	37	7	28	11	44	10	40
65 or more	9	12	4	16	3	12	2	8
Total	75	100	25	100	25	100	25	100
Average age	50 years		54 years		46 years		53 years	

*Percents are rounded to the nearest whole number.

TABLE VI

TOTAL 1964 GROSS FAMILY INCOME OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE INCOMES*

Total Gross Family Income Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	2	3	0	0	0	0	2	8
$0-1999	5	7	3	12	0	0	2	8
2000-3999	29	39	3	12	13	52	13	52
4000-5999	22	29	10	40	7	28	5	20
6000-7999	8	11	5	20	2	8	1	4
8000-9999	4	5	2	8	1	4	1	4
10,000-11,999	3	4	2	8	1	4	0	0
12,000-13,999	1	1	0	0	0	0	1	4
14,000-15,999	0	0	0	0	0	0	0	0
16,000-17,999	0	0	0	0	0	0	0	0
18,000-19,999	0	0	0	0	0	0	0	0
20,000-21,999	1	1	0	0	1	4	0	0
Total	75	100	25	100	25	100	25	100
Averaging for Those Reporting	4,945		5,480		5,160		4,130	

*Percents are rounded to the nearest whole number.

in this grouping than low (32 percent). Thus, there seems to be a relation between production and gross family income.

Sixty Grade A producers in Henry County the previous year averaged $19,339. This wide difference of some $14,000 indicates the possiblity of considerable opportunity for improvement for manufacturing milk producers.

VI. STAGES IN THE ADOPTION PROCESS

Following each interview, the respondent was rated by the interviewer with respect to his adoption of recommended dairy management practices in general. Table VII discloses that the high producers (3.2 points) were scored between "Soon after the first few" and "Sooner than average", while low producers (2.7) rated between "Sooner than average" and "A little latter than most." There was little difference in the scores of the medium and low producers.

VII. SEX GROUPS

Fourteen of the respondents were females; however, only three of them had sole responsibility for the management of the dairy herd. Two of the women having complete managerial responsibility were in the high production group and one was in the low. Very little difference was to be noted due to sex.

In 11 of the interviews both husband and wife participated in answering the questions.

TABLE VII

INTERVIEWER'S OPINION OF STAGES OF THE ADOPTION PROCESS REPRESENTED BY ALL HENRY COUNTY PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS, IN TERMS OF NEW RECOMMENDED DAIRY MANAGEMENT PRACTICES, BY NUMBERS AND PERCENTS*

Stage in Adoption of New Dairy Management Practices	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Among the first few (5 points)	7	9	4	16	0	0	3	12
Soon after first few (4 points)	16	21	8	32	5	20	3	12
Sooner than average (3 points)	20	27	4	16	8	32	8	32
A little later than most (2 points)	23	31	8	32	10	40	5	20
Among the last few (1 point)	9	12	1	4	2	8	6	24
Total	75	100	25	100	25	100	25	100
Average Stage	2.9 points		3.2 points		2.6 points		2.7 points	

*Percents are rounded to nearest whole number.

VIII. INTEREST IN DAIRY HERD MANAGEMENT IMPROVEMENT

Table VIII shows the ratings given by the interviewer with regard to the producer's interest in improving his level of dairy herd management. These ratings were given numerical numbers with those receiving a "Not interested" rating zero (0) and the ratings of "Indifferent", "Somewhat interested" and "Very interested" receiving ratings of 1, 2, and 3 respectively.

The high producers (2.2 points) rated between "Somewhat" and "Very interested", while the low producer (1.8 points) were between "Indifferent" and "Somewhat interested".

IX. MAJOR OCCUPATIONS

Eighty-four percent of the producers were classed full-time farmers (Table IX). Six high producers, three medium and three low producers received income from sources off the farm.

X. MAJOR FARM ENTERPRISES

Dairying was the major farm enterprise on 36 percent of the farms in the study (see Table X). More of the high producers (36 percent) than the low (28 percent) received most of their income from the dairying enterprise.

"General farming" was the second most frequently mentioned major farm enterprise, 27 percent of the dairymen (36 percent of the high and 24 percent of the low) reporting. Fifteen percent of all dairymen listed

TABLE VIII

INTERVIEWER'S OPINION OF THE INTEREST OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS, IN IMPROVING THEIR LEVELS OF DAIRY HERD MANAGEMENT BY NUMBERS AND PERCENTS, AND AVERAGE INTEREST*

Degree of Interest in Improving Dairy Management Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Interested (0 points)	4	6	1	4	1	4	2	8
Indifferent (1 point)	10	13	1	4	3	12	6	24
Somewhat Interested (2 points)	13	57	15	60	16	64	12	48
Very Interested (3 points)	18	24	8	32	5	20	5	20
Total	75	100	25	100	25	100	25	100
Average Interest	2.0 points		2.2 points		2.0 points		1.8 points	

*Percents are rounded to nearest whole number.

TABLE IX

MAJOR OCCUPATIONS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Major Occupation	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Full-time Farmer	63	84	19	76	22	88	22	88
Part-time Farmer	12	16	6	24	3	12	3	12
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE X

MAJOR FARM ENTERPRISES OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Major Farm Enterprise	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Dairy	27	36	9	36	11	44	7	28
General Farming	20	27	9	36	5	20	6	24
Nonfarmer	11	15	5	20	4	16	2	8
Tobacco	7	9	1	4	3	12	3	12
Cotton	5	6	0	0	1	4	4	16
Beef	2	3	0	0	1	4	1	4
Other Livestock	1	1	1	4	0	0	0	0
Other farm	2	2	0	0	0	0	2	8
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

themselves as nonfarmers, more high producers (20 percent) than low (8 percent falling in this category.

Twenty-eight percent of the low producers were cotton and tobacco raisers.

XI. TOTAL FARM ACREAGE

Table XI shows a wide range in fram acreages from 25 to 550 acres per farm. The high producers, with an average of 159 acres, had 6 total farm acres more than the low group. The medium group average was much lower with 115 acres. The average of 142 acres for the manufacturing milk producers is almost the same as the county average of 140 acres (5:147).

XII. TOTAL CROPLAND ACREAGE

Eighty-eight percent of the farms had cropland acreages of less than 150 acres (Table XII). The high producers' farms had an average of 101 acres compared to 81 acres for the medium producers and 91 acres for the low producers.

XIII. COWS MILKED

Size of Herd

Table XIII indicates that the averaged sized herd for the entire group was 10 cows, with a range of from 2 through 34. It is interesting to note that the high producers milked from 3 through 16 cows, while the low producer range was from 2 through 34. Only one producer milked more

TABLE XI

TOTAL FARM ACREAGE CATEGORIES OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS AND AVERAGE FARM ACRES*

Total Farm Acreage Interval	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Under 50	8	11	4	16	3	12	1	4
50-99	17	23	2	8	8	32	7	28
100-149	26	35	7	28	10	40	9	36
150-199	13	17	7	28	2	8	4	16
200-249	3	4	1	4	1	4	1	4
250-299	3	4	2	8	0	0	1	4
300-349	0	0	0	0	0	0	0	0
350-399	2	3	1	4	1	4	0	0
400-449	1	1	0	0	0	0	1	4
450-499	1	1	1	4	0	0	0	0
500-549	1	1	0	0	0	0	1	4
550-600	0	0	0	0	0	0	0	0
Total	75	100	25	100	25	100	25	100
Average Acres In Farm	142		159		115		153	

*Percents are rounded to nearest whole number.

TABLE XII

TOTAL CROPLAND ACREAGE CATEGORIES OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE ACRES*

Total Cropland Acreage Interval	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0-49	16	21	5	20	6	24	5	20
50-99	33	44	8	32	13	52	12	48
100-149	17	23	7	28	4	16	6	24
150-199	6	8	4	16	1	4	1	4
200-249	2	3	1	4	1	4	0	0
250-299	0	0	0	0	0	0	0	0
300-349	1	1	0	0	0	0	1	4
350-399	0	0	0	0	0	0	0	0
400-450	0	0	0	0	0	0	0	0
Total	75	100	25	100	25	100	25	100
Average Acres in Cropland	91		101		81		91	

*Percents are rounded to the nearest whole number.

TABLE XIII

TOTAL NUMBER OF COWS MILKED BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE HERD SIZE*

Herd Size Interval in Number of Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
2-5	14	19	4	16	3	12	7	28
6-10	35	47	12	48	14	56	9	36
11-15	19	25	8	32	5	20	6	24
16-20	4	5	1	4	1	4	2	8
21-25	2	3	0	0	2	8	0	0
26-30	0	0	0	0	0	0	0	0
31-35	1	1	0	0	0	0	1	4
Total	75	100	25	100	25	100	25	100
Actual Average Herd Size	10 cows		9 cows		10 cows		10 cows	
Range	2-34 cows		3-16 cows		5-25 cows		2-34 cows	

*Percents are rounded to the nearest whole number.

than 30 cows and he was in the low butterfat group. The average herd size of 10 cows was approximately one-third the size of the average Grade A herd in the county in 1963 (17:22).

Registered Cows

As seen in Table XIV, while only 3 producers in each of the high and medium groups were milking any registered cows, 6 of the low producers were milking some registered animals. Sixty-three producers reported no registered cows milked at all.

Twenty percent of the producers showed an average of six registered cows milked, while 12 percent each of the medium and high producers showed an average of 3 registered cows milked.

Breed of Cows

Tables XV and XVI show the breeds of registered and grade cows and their distribution throughout the three production groups. Only 9 producers had some registered Jerseys and 7 had some registered Holsteins. Surprisingly fewer high producers (12 percent) had registered cows than was true for low producers (24 percent). There seemed to be little relation between breed and production.

XIV. HEIFERS KEPT

Replacement

Tables XVII and XVIII show that 57 percent of the producers had hiefers for replacements over one year of age, and 49 percent had

TABLE XIV

TOTAL NUMBERS OF REGISTERED COWS MILKED BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Registered Cows Milked	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	63	84	22	88	22	88	19	76
1-9	11	15	3	12	3	12	5	20
10-19	0	0	0	0	0	0	0	0
20-29	1	1	0	0	0	0	1	4
Total	75	100	25	100	25	100	25	100
Actual Average Number for those who reported	4 cows		3 cows		3 cows		6 cows	

*Percents are rounded to the nearest whole number.

TABLE XV

BREEDS OF REGISTERED COWS MILKED IN 1964 BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Registered Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	62	83	22	88	21	84	19	76
Jersey	6	8	1	4	2	8	3	12
Holstein	3	4	1	4	1	4	1	4
Guernsey & Holstein	1	2	0	0	0	0	1	4
Holstein & Jersey	1	1	0	0	1	4	0	0
Guernsey, Holstein & Jersey	1	1	0	0	0	0	1	4
Brown Swiss, Guernsey, Holstein & Jersey	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE XVI

BREEDS OF GRADE COWS MILKED IN 1964 BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Grade Cows	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Jersey	12	16	4	16	4	16	4	16
Holstein	7	9	4	16	2	8	1	4
Ayrshire	1	1	1	4	0	0	0	0
Mixed	1	1	1	4	0	0	0	0
Holstein & Jersey	12	16	5	20	4	16	3	12
Guernsey & Holstein	2	3	0	0	0	0	2	8
Guernsey, Holstein & Jersey	13	17	3	12	5	20	5	20
Brown Swiss, Holstein, Jersey, Guernsey & Ayrshire	27	37	7	28	10	40	10	40
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE XVII

TOTAL NUMBERS OF HEIFERS ONE YEAR OR OLDER KEPT BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	32	43	8	32	12	48	12	48
1-10	42	56	17	68	12	48	13	52
11-20	1	1	0	0	1	4	0	0
Total	75	100	25	100	25	100	25	100
Actual Average Number Kept For Those Who Reported	3 heifers		3 heifers		4 heifers		3 heifers	

*Percents are rounded to the nearest whole number.

TABLE XVIII

TOTAL NUMBERS OF HEIFERS UNDER ONE YEAR OF AGE KEPT BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	38	51	13	52	14	56	11	44
1-10	36	48	12	48	10	40	14	56
11-20	1	1	0	0	1	4	0	0
Total	75	100	25	100	25	100	25	100
Actual Average Number Kept For Those Who Reported	5 heifers		5 heifers		5 heifers		4 heifers	

*Percents are rounded to the nearest whole number.

replacements under one year old. Twenty-four percent of the producers in each group kept no heifers at all.

High producers who kept heifers had a total of 8 replacement heifers per herd, while the medium averaged 9 and the low 7. Eight percent of the high producers and 16 percent of the low kept only a single heifer.

Registered Heifers

Only 4 producers were keeping registered heifers over one year of age and four producers were keeping registered heifers under one year of age. Tables XIX and XX show three heifers to be the average number kept by those with registered heifers. Only one producer in each of the high and low groups with 2 in the medium group kept only registered heifers. Several producers indicated they had heifers that were from a purebred sire and dam, but felt that they would not benefit by registering them.

Breed of Heifers

Table XXI indicates that there were only 6 producers who reported raising registered heifers. Two of these were in the high group, three in the medium and one in the low group. One each of the high and medium producers were keeping registered Jerseys, while two of the medium producers were keeping registered Holsteins. There seems to be no clear relation between breed and production group.

TABLE XIX

TOTAL NUMBER OF REGISTERED HEIFERS ONE YEAR OR OLDER KEPT BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	71	95	24	96	23	92	24	96
1-10	4	5	1	4	2	8	1	4
Total	75	100	25	100	25	100	25	100
Average Number Kept By Those Who Reported	3 heifers		2 heifers		2 heifers		5 heifers	

*Percents are rounded to the nearest whole number.

TABLE XX

TOTAL NUMBERS OF REGISTERED HEIFERS UNDER ONE YEAR OF AGE KEPT BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Heifers Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	71	95	24	96	23	92	24	96
1-10	4	5	1	4	2	8	1	4
Total	75	100	25	100	25	100	25	100
Actual Average Number Kept By Those Who Reported	3 heifers		5 heifers		3 heifers		1 heifer	

*Percents are rounded to the nearest whole number.

TABLE XXI

BREEDS OF REGISTERED HEIFERS KEPT IN 1964 BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Registered Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	69	92	23	92	22	88	24	96
Holstein	2	3	0	0	2	8	0	0
Jersey	2	3	1	4	1	4	0	0
Holstein & Jersey	1	1	1	4	0	0	0	0
Ayrshire, Guernsey & Jersey	1	1	0	0	0	0	1	4
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

Of the grade heifers kept, Table XXII shows that 32 percent of the producers were keeping mixed heifers, 29 percent predominately Holstein heifers, 15 percent Jersey heifers, and 24 percent were in other categories. Several producers said they planned to save their best crosses with either Angus or Hereford and later go to beef herds.

XV. BULLS KEPT

Table XXIII shows that 96 percent of the producers kept no dairy bulls. One producer in the high and two in the medium group were keeping dairy bulls.

Data in Table XXIV shows that one grade Holstein and two grade Jersey bulls were kept. No registered dairy bulls were kept in any of the herds.

It seems that a large number had been using beef bulls because they wanted to save some cross-bred beef heifers. Also, they felt that their day old male calves were selling higher when sired by a beef bull.

XVI. RATING OF HERD

Tables XXV and XXVI show the ratings of the dairy herds as adjudged by the producer and the interviewer respectively.

Over 50 percent of the high producers rated the value and condition of their herds as "good". Only 2 high producers indicated a rating of "excellent" and 2 rated their herds as "poor". Nearly all producers would first say "about average". Then in the final analysis

TABLE XXII

BREEDS OF GRADE HEIFERS KEPT IN 1964 BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Registered Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Mixed	24	32	7	28	8	32	9	36
Holstein	22	29	8	32	7	28	7	28
Jersey	11	15	3	12	2	8	6	24
Holstein & Jersey	8	10	3	12	5	20	0	0
Guernsey, Holstein &/or Jersey	4	5	1	4	2	8	1	4
Ayrshire	2	3	2	8	0	0	0	0
Guernsey	2	3	0	0	1	4	1	4
Guernsey & Holstein	2	3	1	4	0	0	1	4
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE XXIII

TOTAL NUMBERS OF BULLS KEPT BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY NUMBERS AND PERCENTS, AND AVERAGE NUMBERS*

Number of Bulls Kept	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
0	72	96	24	96	23	92	25	100
1	3	4	1	4	2	8	0	0
Total	75	100	25	100	25	100	25	100
Average Number Kept	1		1		1		0	

*Percents are rounded to the nearest whole number.

TABLE XXIV

BREEDS OF GRADE BULLS KEPT IN 1964 BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Breed of Grade Bulls	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	72	96	24	96	23	92	25	100
Holstein	1	1	0	0	1	4	0	0
Jersey	2	3	1	4	1	4	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE XXV

RATINGS GIVEN TO THEIR DAIRY HERDS BY ALL HENRY COUNTY DAIRY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN NUMBERS AND PERCENTS, AND AVERAGE*

Ratings Dairymen Gave Their Own Herds	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	5	6	0	0	4	16	1	4
Poor (0 points)	2	3	2	8	0	0	0	0
Fair (1 points)	32	43	7	28	14	56	11	44
Good (2 points)	33	44	14	56	7	28	12	48
Excellent (3 points)	3	4	2	8	0	0	1	4
Total	75	100	25	100	25	100	25	100
Average Rating	1.53 points		1.64 points		1.33 points		1.58 points	

*Percents are rounded to nearest whole number.

TABLE XXVI

INTERVIEWER'S RATINGS GIVEN THE HERDS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS, AND AVERAGE

Ratings Interviewers Gave Herds of Interviewers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not known well enough to rate	51	68	14	56	21	84	16	64
Poor (0 points)	4	5	1	4	0	0	3	12
Fair (1 point)	5	7	1	4	2	8	2	8
Good (2 points)	15	20	9	36	2	8	4	16
Excellent (3 points)	0	0	0	0	0	0	0	0
Total	75	100	25	100	25	100	25	100
Average Rating of Herds of Known Respondents	1.50 points		1.70 points		1.50 points		1.10 points	

*Percents are rounded to the nearest whole number.

were about equally divided between "good" and "fair", as indicated by the average score of 1.53. High producers, on the average, rated their herds slightly higher (1.64 points) than the low (1.58 points).

Table XXVI shows that the interviewer knew only 32 percent of the herds well enough to rate them. Forty-four percent of the herds in the high production group were known well enough to rate, while only 36 percent of the low were known.

The average rating for the high group was 1.70 points, slightly below "good", and for the low was 1.10 points, slightly above "fair".

The interviewer tended to rate high and medium producers slightly higher than they rated themselves, while the reverse was true for the low.

XVII. TYPE OF MILKING FACILITIES AND EQUIPMENT

Table XXVII shows that 36 percent of the manufacturing milk producers were using elevated stalls, 35 percent were using stanchion-type facilities and 29 percent were milking in stables. Forty-eight percent of those using elevated stalls were high producers as were 36 percent of those using stanchions. However, only 16 percent of those milking in stables were in the high group. The largest percent (40) of the low producers used stables, while others used elevated stall (32 percent) and stanchion (28 percent). More of the high producers (48 percent) had elevated stalls, while more of the low (40 percent) had stables.

TABLE XXVII

TYPES OF MILKING FACILITIES USED BY ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Type of Milking Facility	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Stanchion	26	35	9	36	10	40	7	28
Elevated Stall	27	26	12	48	7	28	8	32
Stables	22	29	4	16	8	32	10	40
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

The survey showed that all the producers, excepting two (a medium and a low producer) who were changing over to Grade A, were selling milk in cans. The medium producer mentioned above had a 500 gallon tank and the low had a tank with 300 gallon capacity.

Only one producer was using a pipeline system, which had been installed in preparation for selling Grade A milk. None of the producers had weighing devices.

XVIII. STORAGE AVAILABLE FOR SILAGE

Table XVIII shows that 84 percent of the producers did not have a silo. Eleven producers had a trench silo and one producer had a bunker. However, only 5 of the producers (2 high, 1 medium and 2 low) were using their silos.

The reasons given for not using their silos were the following: "we don't have enough cows to justify the labor and equipment needed" and "we don't have enough labor available to fill the silo and feed the silage." Five of the producers had storage capacity in the interval of two to three hundred tons, five ranged between one and two hundred tons and two had silo capacities with less than one hundred tons. Of these who used their silos, the 2 high producers had 25 tons of capacity per cow, the medium had 10 tons and the low 8.5 tons per cow.

XIX. SOURCE OF WATER FOR COWS

The different methods of providing water for cows is shown in Table XXIX. It is interesting to note that 80 percent of the producers

TABLE XXVIII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS HAVING DIFFERENT KINDS OF SILOS*

Type of Silo	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	63	84	22	88	22	88	19	76
Upright	0	0	0	0	0	0	0	0
Trench	11	15	2	8	3	12	6	24
Bunker	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE XXIX

NUMBERS AND PERCENTS* OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS ACCORDING TO SOURCES OF WATER FOR COWS AND AVERAGE NUMBER OF SOURCES**

Source of Water For Milk Cows	All Dairymen Interviewed (N = 75)		High Producers (N = 25)		Medium Producers (N = 25)		Low Producers (N = 25)	
	No.	%	No.	%	No.	%	No.	%
Pond	60	80	15	60	23	92	22	88
Stream	40	53	15	60	12	48	13	52
Water Outside Barn	32	43	17	68	6	24	9	36
Water in Barn	8	11	7	28	0	0	1	4
Average Number Of Sources	1.87 Sources		2.16 Sources		1.64 Sources		1.80 Sources	

*Percents are rounded to nearest whole number.

**Numbers and percents do not add up to totals since some dairymen reported more than one source of water.

had ponds. More than one-half (53 percent) had streams, and 43 percent had water troughs outside the barn, more than two-thirds (68 percent) of the high producers having such water as compared with only about one-third (36 percent) of the low. Seven of the 8 producers providing water in the barn were high producers. Also, the producers with the largest average number of sources of water were high producers.

XX. AMOUNT OF LOAFING BARN AREA

Seventy-five percent of the producers were using less than 30 square feet per cow of loafing area, as seen in Table XXX, 60 percent of these were in the high, 80 in the medium and 84 in the low producing group. Only 8 producers had more than the recommended 50 square feet per cow and 5 of these were in the high group. This was one area where most producers felt they needed to improve as they were in almost all cases feeding hay in the loafing area.

XXI. PERSON DOING THE MILKING

Table XXXI shows that 96 percent of the producers did their own milking. Two producers had tenants doing the milking and both of these were in the low group. In one instance, a hired man did the milking (in a high producing herd). Also, only one of the tenants was paid on a percentage basis.

TABLE XXX

NUMBERS AND PERCENTS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS HAVING DIFFERENT AMOUNTS OF LOAFING BARN AREA PER COW*

Loafing Barn Area per Cow (Square Feet)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Under 30	56	75	15	60	20	80	21	84
30-39	10	13	5	20	3	12	2	8
40-49	1	1	0	0	1	4	0	0
50-59	3	4	3	12	0	0	0	0
60-69	1	1	1	4	0	0	0	0
70 or more	2	3	1	4	1	4	0	0
Box (free) stalls	2	3	0	0	0	0	2	8
Total	72	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE XXXI

PERSONS DOING THE MILKING ON FARMS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY NUMBERS AND PERCENTS*

Person Doing Milking	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Owner	72	96	24	96	25	100	23	92
Tenant	2	3	0	0	0	0	2	8
Hired Man	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

XXII. BUTTERFAT PRODUCTION

Table XXXII shows that the herds were selling on the average 243 pounds of butterfat per cow. Twenty-one of these were selling less than 200 pounds which would not seem to be a profitable milk operation. Twenty-one percent sold between 250 and 300 pounds. An additional 20 percent sold between 300 and 450 pounds of butterfat (actual ranges of production are listed in Table I).

XXIII. MILK PRODUCTION

The average milk production per cow is shown in Table XXXIII. The average production for the 75 herds in 1964 was 5,543 pounds per cow. Fifty-two of the 75 producers were producing between 4,000 and 7,000 pounds, 16 producers were above 7,000 pound average and 7 were below 4,000 pounds.

The high producers had an average of 7,517 pounds which is nearly equal to the national average of 8,080 (18:1). The low producer average of 3,754 pounds indicates the likelihood that a large number may not be breaking even on their operation.

XXIV. BACTERIAL COUNT

The bacterial count was below one-half million for 48 percent of the producers as shown in Table XXXIV.

It is a natural assumption that a low bacterial count is indicative of good management and higher production. The figures in this

TABLE XXXII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE BUTTERFAT PRODUCTION CATEGORIES FOR 1964, AND TOTAL AVERAGES*

Average Butterfat Production Category, 1964 (Pounds sold/ cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
80-109	2	2	0	0	0	0	2	8
110-149	2	3	0	0	0	0	2	8
150-199	17	23	0	0	0	0	17	68
200-249	23	31	0	0	19	76	4	16
250-299	16	21	10	40	6	24	0	0
300-349	5	7	5	20	0	0	0	0
350-399	6	8	6	24	0	0	0	0
400-449	4	5	4	16	0	0	0	0
Total	75	100	25	100	25	100	25	100
Actual Total Average Production	243 lbs.		328 lbs.		234 lbs.		168 lbs.	

*Percents are rounded to nearest whole number.

TABLE XXXIII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE MILK PRODUCTION CATEGORIES FOR 1964, AND TOTAL AVERAGES*

Average Milk Production Category, 1964 (Pounds sold/cow)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
2,000-2,999	2	3	0	0	0	0	2	8
3,000-3,999	5	7	0	0	0	0	5	20
4,000-4,999	16	21	0	0	1	4	15	60
5,000-5,999	17	23	2	8	12	48	3	12
6,000-6,999	19	25	7	28	12	48	0	0
7,000-7,999	5	7	5	20	0	0	0	0
8,000-8,999	4	5	4	16	0	0	0	0
9,000-9,999	4	5	4	16	0	0	0	0
10,000-10,999	2	3	2	8	0	0	0	0
11,000-11,999	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100
Actual Average Production	5,543 lbs.		7,517 lbs.		5,357 lbs.		3,754 lbs.	

*Percents are rounded to nearest whole number.

TABLE XXXIV

NUMBERS AND PERCENTS OF ALL HENRY COUNTY MANUFACTURING MILK PRODUCERS INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE BACTERIAL COUNT CATEGORIES IN 1963, AND TOTAL MEDIAN COUNTS*

Average Bacterial Count Category (Number/ml.)	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Under 500,000	36	48	13	52	10	40	13	52
500,000 to 1,000,000	16	21	6	24	5	20	5	20
1,000,000 to 1,500,000	11	15	2	8	7	28	2	8
1,500,000 to 2,000,000	8	11	3	12	0	0	5	20
2,000,000 to 2,500,000	1	1	0	0	1	4	0	0
2,500,000 to 3,000,000	1	1	1	4	0	0	0	0
3,000,000 to 4,400,000	0	0	0	0	0	0	0	0
4,400,000 to 5,800,000	2	3	0	0	2	8	0	0
Total	75	100	25	100	25	100	25	100
Total Median Count**	875,000		475,000		1,125,000		475,000	

*Percents are rounded to nearest whole number.

case did not show this however as the high and low groups were the same with median bacterial counts of 475,000. The medium group was much higher with 1,125,000.

CHAPTER III

SUMMARY

This report is based on the characteristics of manufacturing milk producers in Henry County, Tennessee. The information was obtained through a personal interview survey of 75 of the 132 producers who sold manufacturing milk in the county in 1964. The manufacturing milk buyer in Paris made milk production, butterfat test records and bacterial count information available for this study. Butterfat production was used to determine high, medium and low producers with 25 assigned to each group.

I. REVIEW OF FINDINGS

The following findings were revealed concerning the characteristics of manufacturing milk producers in Henry County who produced in the high, middle and low thirds, according to the average pounds of butterfat produced per cow in 1964:

1. The 75 producers averaged 5,530 pounds of milk and 243 pounds of butterfat per cow in 1964, milk from the high producers' cows being twice the amount from the low producers on the average.

2. The average formal education level was 8.6 years, with the high third of producers having 1.1 years more schooling than the low third.

3. The average age of the producers was 50 years, the high producers averaging 54 years of age and the low producers 53.

4. Only about one-third of the producers were known by the interviewer, with 52 percent of the high producers known compared to 36 percent of the low producers.

5. Most producers had a friendly attitude toward the survey.

6. The average gross family income was $4,945, with the high group averaging $5,480 while the low producers averaged $4,130.

7. Eighty-four percent of the producers were classed as full-time farmers with only about one-third of the 75 producers receiving the major portion of their incomes from manufacturing milk sales.

8. About one-half of the manufacturing producers were raising replacement heifers to continue their dairy herds.

9. The dairymen had averages of 142 acres of total farm land and 91 acres of cropland.

10. The dairymen had an average herd size of 10 cows, the high producers having one cow less than medium and low producers.

11. Only 6 of the producers out of 75 kept any registered heifers.

12. About 30 percent of the producers (mostly low and medium) were using stables or sheds to milk in rather than stanchions or elevated stalls.

13. Only 5 producers had and were using silos.

II. IMPLICATIONS

Some of the implications that can be drawn from the findings are:

1. Further evaluation of the data from the manufacturing milk survey would be useful in planning for a more effective educational effort with manufacturing producers in Henry County.

2. The characteristic differences between the high and low producers should be studied in planning educational programs for Henry County dairymen.

PROBLEM B:

MANAGEMENT PRACTICES OF HENRY COUNTY MANUFACTURING MILK PRODUCERS

A Special Problem in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

John W. F. Caldwell

June 1966

CHAPTER I

INTRODUCTION

Manufacturing milk production became important in Henry County with the location of a Pet milk plant at Paris in 1950. Prior to that time the sale of cream was practically the only source of income from milk products in the county with the exception of Grade A milk sales.

From 1950 to 1954 the number of manufacturing milk producers increased rapidly to more than 900 in Henry County according to Paris Pet Milk Company records. Several of the producers had progressed to the point, through improved practices and facilities, that they sought a higher price for their milk through Grade A channels. During 1954 the number of manufacturing milk producers began to decline. By January 1966, there were only 132 producers selling manufacturing milk to the local plant. The total amount paid for milk by the Pet plant in 1964 was $292,582. An additional check with the Weakley County Dairy revealed that 22 producers on the western edge of Henry County were selling them milk, a part of which was used for manufacturing. In addition, there were 60 Grade A producers in the county in 1964 (17:4).*

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*Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

Incentive payments had been made by the Paris Pet Milk Company to producers who would install milk coolers. Also, information made available by Pet field men regarding sanitation, fly control, weighing, use of elevated stalls and electric milkers and proper feeding caused many changes in the practices followed by manufacturing milk producers.

A study of the 60 Grade A producers was made in Henry County in 1963. Other similar studies in several selected counties in Tennessee are underway with the cooperation of the Agricultural Extension Training and Studies Department and the Dairy Department of the University of Tennessee.

No previous attempt had been made to learn what Henry County manufacturing milk producers were or were not doing in regard to recommended practices. By using the combined findings of the Grade A and manufacturing milk studies concerning the present situation and the management practices being used in the county it was felt that the Agricultural Extension Service would be better equipped to provide educational information that should help dairymen be more efficient producers in the future.

I. THE PURPOSE OF THE STUDY

The purpose of this study then was to determine the kinds of management practices that were being used by Henry County manufacturing milk producers in high, medium, and low production groups in terms of pounds of butterfat produced per cow in 1964.

II. REVIEW OF LITERATURE

There seemed to be little information available concerning practices followed by manufacturing milk producers in Tennessee.

Chappell (6:2), from a survey mailed to 25 manufacturing milk plants in 1961, reported the following findings regarding the management practices of the manufacturing milk producers surveyed:

1. A total of 57 percent bred over one-half of their cows to beef bulls.

2. Only 36 percent raised replacements, and only 7 percent raised heifers for sale.

3. Two percent reported that they weighed milk from individual cows.

4. About 65 percent of the producers had fair, poor, or no hay.

5. Summary information indicated that total production, total cow numbers and production per cow were associated with the installation of elevated stalls and by making adequate amounts of high quality silage available.

Shearon (17:106) found that the 20 Grade A dairymen in Henry County who annually produced in the high third in pounds of butterfat, operated at a higher management level, and had a higher practice diffusion rating on 19 of 23 production practices, than did the 20 producers in the low third.

In a 1960 Virginia study (7:3), the most important problems listed by "manufacturing grade" farmers were low production per cow,

poor forage, and insufficient forage. Beef bulls were used for breeding 63 percent of the cows.

Sumrall and Hurt (19:2) reported the following costs and net returns from a 1957 to 1962 management study entitled "Producing manufacturing milk in Mississippi."

A 40-cow herd at the Pontotoc Branch Experiment Station with a herd average of 8,727 pounds of milk per cow showed a net return to labor and capital of $118 per cow per year for the 5-year period. The calculated average production cost per one hundred pounds of milk was $2.19 and the net return was $1.34 per hundred pounds. The average cost of keeping a cow per year amounted to about $190. They concluded that production must be over 5,500 pounds per cow to show a profit in Mississippi when selling milk for manufacturing purposes at a price of $3.53 per hundred.

III. METHODS

A complete list of Henry County manufacturing milk producers selling milk to the Pet Milk Company was obtained from the plant in Paris. From the list of 132 producers, 75 were selected by random sampling for survey. Records on butterfat sold, milk production and bacterial count for 1964 were then obtained from the milk plant.

The producers were divided into three groups of 25 according to their levels of butterfat production. The average level of butterfat produced per cow for the entire group was 243 pounds. The high producers

averaged 328 pounds with a range of 261 to 454 pounds. The medium producers averaged 234 pounds with a range of 208 to 260 pounds. The low group averaged 168 pounds with a range of 77 to 200 pounds. No effort was made to try to estimate the value of other milk possibly produced but not sold.

An effort was made to determine the practice adoption level of producers in these groups regarding 23 recommended dairy production practices.

A personal interview was conducted with each of the 75 manufacturing milk producers. In asking the survey questions, care was exercised not to influence the producers' answers. Each respondent was handed a card with the recommended practice typed on it, as it appeared on the interview schedule. This was done in order to help the respondent understand the practice as the interviewer discussed it with him. The interviewer explained only the basic details regarding the practice and tried to let the respondent answer as he felt he was really carrying out the practice.

Rating Explanation

The following rating scheme was used to classify management levels of the producers for each of the 23 practices: 1) no points were given if the person interviewed had not heard of the specific practice; 2) one point was given if the person had only heard of the practice; 3) two points were given if the person was only interested

in it; 4) three points were given if the person had not tried the practice but planned to do so; 5) four points were given if the person had tried the practice but was not using it at the time of interview, and 6) five points were given if the person had tried the practice and was still using it.

The practice adoption levels of the producers in the high, medium and low thirds are compared in this study and their numeral values are referred to as the practice diffusion ratings. The scale used to show the diffusion stage and rating interval is as follows: 0 to .5 - "unaware"; .5 to 1.5 - "aware"; 1.5 to 2.5 - "interested"; 2.5 to 3.5 - "planning to try"; 3.5 to 4.5 - "tried"; 4.5 through 5.0 - "using".

The practice diffusion rating for each producer has been determined by adding his total score on all the recommended practices and dividing by 23. Ratings are listed for the high, medium and low production groups. Other data were compared in numbers, percents and averages. The main comparisons are made between the high and low producers.

CHAPTER II

FINDINGS

I. MANAGEMENT LEVELS OF MILK PRODUCERS

Average Practice Diffusion Rating Intervals

Table XXXV gives the average practice diffusion ratings for the 75 Henry County dairymen divided into high, medium and low thirds according to average butterfat production per cow.

It is noted that all dairymen were, on the average, in the "planning to try" stage on the 23 practices studied with an average rating of 3.08. The high producers rated higher (3.25) than either the medium (3.07) or low (2.91) producers.

It is interesting to note that 36 percent of the high producers were in the "tried" stage, while only 16 percent of the low producers and 20 percent of the medium producers scored this high. Eight percent of the high producers scored below the "interested" stage, while 32 percent of the low producers were in the range from 1.70 to 2.50. None averaged in the "using" (adopted) category for the total list of 23 practices.

Relation to Production

The average individual dairy management practice diffusion ratings and total average ratings for all Henry County dairymen interviewed,

TABLE XXXV

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY AVERAGE PRACTICE DIFFUSION RATING INTERVALS, AND TOTAL AVERAGE PRACTICE DIFFUSION RATINGS*

Average Practice Diffusion Rating Interval	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
1.70-2.49	15	20	2	8	5	20	8	32
2.50-3.49	42	56	14	56	15	60	13	52
3.50-4.49	18	24	9	36	5	20	4	16
4.50-5.00	0	0	0	0	0	0	0	0
Total	75	100	25	100	25	100	25	100
Actual Total Average	3.08		3.25		3.07		2.91	

*Percents are rounded to nearest whole number.

**In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

high, medium and low producers are shown in Table XXXVI. Also, Table XXXVII gives a breakdown of the percents of Henry County dairymen in each of the stages of the diffusion process for each of the management practices studied.

A wide variation in average practice diffusion ratings (Table XXXVI) is noted from practice to practice of all dairymen. On the average, the range ran from the barely "aware" stage (averaging .97) for Practice 7, "adequate milk records kept," to the "using" stage (averaging 4.99) for Practice 4, "12-14 month calving period provided cows." All producers averaged in the "using" stage with regard to only 3 practices: 1) Practice 3, "60-day dry period provided cows" (4.92); 2) Practice 4, mentioned above (4.99), and 3) Practice 20, "flies systematically controlled" (4.83).

The high producers had a higher average rating than did the low producers in 15 of the 23 practices. They averaged .72 to 1.68 points better than the low producers in 7 of the 15 practices. These apparently critical practices may give some indications regarding the reasons for differences in production. Some observations regarding these and other practices will follow below.

Breeding Practices

The first six practices in Tables XXXVI and XXXVII are related to breeding. In the main, all producers averaged in the "tried" or "using" stage with the exception of Practice 5, "75 percent of cows

TABLE XXXVI

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS AND TOTAL AVERAGE RATINGS FOR ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS*

Dairy Management Practices	All Dairymen Average Rating	High Producers Average Rating	Medium Producers Average Rating	Low Producers Average Rating
1. Artificially inseminated 1/2 or more of cows	4.29	4.32	3.84	4.70
2. All cows bred to same breed bull	3.64	3.88	3.52	3.52
3. 60-Day dry period provided cows	4.92	5.00	4.96	4.80
4. 12-14 Month calving period provided	4.99	5.00	5.00	4.96
5. 75 Percent cows fall freshened	2.01	2.36	2.36	1.32
6. 75 Percent herd replacements raised	4.24	4.16	4.16	4.40
7. Adequate milk records kept	0.97	1.12	0.84	0.96
8. Fed cows according to production	1.07	0.96	1.08	1.16
9. Adequate herd records kept	3.72	3.80	3.84	3.52
10. Calves permanently identified	1.40	1.32	1.52	1.36
11. Adequate supply of silage provided	1.11	1.32	1.04	0.96
12. High quality silage provided	0.73	0.72	0.68	0.80
13. Silage supplemented with enough hay	3.28	4.08	2.88	2.88
14. High quality hay provided	3.91	4.20	4.32	3.20
15. Hay and/or silage provided on pasture	3.07	3.32	2.88	3.00
16. Adequate improved pasture provided	4.18	4.76	4.24	3.72
17. Sufficient summer pasture provided	3.68	3.36	4.12	3.56
18. Strip cup always used	2.19	2.00	2.52	2.04
19. Separate feeding and loafing areas provided	2.68	3.76	2.20	2.08
20. Flies systematically controlled	4.83	4.92	4.96	4.60
21. Milking system 6-month checked	3.01	3.64	2.52	2.88
22. Professional advice obtained	3.03	2.08	3.88	3.12
23. Calves vaccinated for brucellosis, etc.	4.28	4.56	4.44	3.84
Actual total average rating	3.08	3.25	3.07	2.91

*In the rating scale used: 0 = unaware; 1 = aware of the recommended practice; 2 = interested in the practice; 3 = planning to try the practice; 4 = tried the practice but not using, and 5 = using the practice.

TABLE XXXVII

PERCENTS OF HENRY COUNTY DAIRYMEN INTERVIEWED IN VARIOUS STAGES OF THE DIFFUSION PROCESS ON EACH OF PRACTICES STUDIED*

Dairy Management Practice	Unaware of It Percent	Aware of It Percent	Interested In It Percent	Planning To Try Percent	Tried and Not Using Percent	Using It Percent	Total Percent
1. Artificially inseminated 1/2 or more of cows	0	11	0	0	41	48	100
2. All cows bred to same breed bull	12	9	1	0	44	34	100
3. 60-Day dry period provided cows	0	0	1	0	4	95	100
4. 12-14 month calving period provided	0	0	0	0	1	99	100
5. 75 Percent cows fall freshened	37	17	7	3	17	19	100
6. 75 Percent herd replacements raised	5	3	5	3	17	67	100
7. Adequate milk records kept	34	47	12	0	7	0	100
8. Fed cows according to production	50	19	19	0	8	4	100
9. Adequate herd records kept	17	7	4	0	3	69	100
10. Calves permanently identified	44	19	20	0	2	15	100
11. Adequate supply of silage provided	50	24	9	3	7	7	100
12. High quality silage provided	80	6	1	0	1	12	100
13. Silage supplemented with enough hay	24	5	9	0	3	59	100
14. High quality hay provided	13	3	8	0	8	68	100
15. Hay and/or silage provided on pasture	25	8	8	0	11	48	100
16. Adequate improved pasture provided	4	3	9	7	4	73	100
17. Sufficient summer pasture provided	8	10	7	5	19	51	100
18. Strip cup always used	36	14	8	0	19	23	100
19. Separate feeding and loafing areas provided	31	15	5	1	1	47	100
20. Flies systematically controlled	1	1	0	0	6	92	100
21. Milking system 6-month checked	35	2	3	0	9	51	100
22. Professional advice obtained	35	11	4	0	2	48	100
23. Calves vaccinated for brucellosis, etc.	8	0	0	0	35	57	100
Total average	24	12	5	1	11	47	100

*Percents are rounded to the nearest whole number.

fall freshened" comparing the high and low groups on Practice 5, the high group averaged 2.36, "interested", and the low group 1.32, "aware". The low rating of both can be partially explained by the fact that they have no milk base to build, as they would in Grade A production and many of these producers appear to try to freshen their cows in early spring to take advantage of lush growth of pasture. Then too over a 11 year period (1955-65) no substantial price advantage has accrued to those having cows fall freshen; whereas the cost of winter feeding and care rose considerably during the period (7:1).

In Table XXXVII, it is noted that 61 percent of the producers were below the "plan to try" stage on Practice 5, with only 19 percent actually using it. Thirty-seven percent of the producers were not aware of this as being a recommended practice. The low producers averaged 1.04 points below the high and medium groups indicating that more of the low producers not using this practice were in the "unaware" stage. Also, regarding Practice 1, "artificially inseminated one-half or more cows," 48 percent were in the "using" stage, with 41 percent in the "tried" stage. This can be accounted for by the fact that a large number were running beef bulls with the cows.

It was noted from milk records that about 10 percent of the producers were providing a 60 to 90 day dry period and selling no milk during the months of December, January and February. Questions concerning the reason for this procedure brought these answers: The "milk sold won't pay for the feed during these months"; "My facilities are inadequate which makes winter a good time to turn them dry," and

"I don't like to milk in cold, bad weather".

Keeping and Using Records

Practices 7 through 10 are related to records and their use. There is a general assumption that farmers do not like to keep records. The results of this study indicate that this generally true for Henry County manufacturing producers. In Table XXXVI, it is noted that all producers were, on the average, only in the "aware" stage with regard to the bundle of 4 record keeping practices with the exception of Practice 9, "adequate herd records kept". On Practice 9, on all producers on the average, were in the "tried" stage. The high producers averaged only .16 diffusion points above the low producers on the practice.

Fifty percent of the producers were "unaware" of Practice 8, "feeding according to production," while only 4 percent were "using" it. When asked if they fed according to production, many of them would say, "What do you mean?" or "Yes, I feed all they will eat while I am milking." All three groups averaged only in the "aware" stage with regard to this practice, with the low producers (1.16) showing a slight advantage over the high producers (.96).

Table XXXVII shows that 69 percent were in the "using" stage on Practice 9, "adequate herd records kept"--including heat, health and calving data. Producers using artificial insemination indicated that calving records and breeding dates were shown on breeding receipts.

Producers further stated that they kept most of the herd records on a calendar or on a barn chart. Table XXXVI shows the average of all producers to be in the "tried" stage on Practice 9, with little difference between groups--though high producers (3.80) rated higher than low (3.52).

All producers were only in the "aware" stage with regard to Practice 10, "calves permanently identified." Several of the producers stated that they could visually identify all the calves (and their dams), with the small number of animals they were keeping. Some of the producers said that they used the vaccination ear tag for identification. Only 15 percent were in the "using" stage on Practice 10.

It appears that much emphasis needs to be put on record keeping when planning educational work for dairymen in Henry County. The same was found to be true of Grade A producers in the county by means of an earlier survey (1964) conducted by Shearon (17:79).

Feeding Practices

Practices 11 through 17 are concerned with adequate feeding. Table XXXVI shows that all producers were in the "tried" stage in only 3 of the 7 feeding practices. Those were: Practice 14, "high quality hay provided", Practice 26, "adequate improved pasture provided", and Practice 17, "sufficient summer pasture provided".

The lowest practice diffusion ratings for any of the feeding practices had to do with providing adequate high quality silage (practices 11 and 12). The average for all producers was only in the

"aware" stage with none of the 3 groups coming above that stage on either practice. It is noted in Table XXXVII that only 7 percent were at the "using" stage for Practice 11, "adequate supply of silage provided," and only 12 percent were at the "using" stage for Practice 12, "high quality silage provided." It is further noted that 50 and 80 percent respectively were "unaware" of Practices 11 and 13. Although Practice 15, "hay and or silage provided on pasture" shows (Table XXXVII) 48 percent in the "using" stage, most of these producers were using hay since only 5 producers were feeding silage.

There is strong indication that encouragement of silage feeding should make a large increase in profits from dairying. Chappell (6:1) reported, based on a mail survey of 25 milk plants, that an increase of 14.5 percent in milk production could possibly be attributed to the addition of silage to the ration. This would merit consideration in future educational program planning.

Sanitation Practices

The next group of practices in Table XXXVI is generally classified under the heading of sanitary practices, and includes Practices 18-20. It is noted that all producers were, on the average, in the "using" stage (4.83) with regard to Practice 20, "flies systematically controlled," in the "planning to try" stage (2.68) on Practice 19, "separate feeding and loafing areas provided," but only in the "interested" stage (2.19) on Practice 18, "strip cup always used." When the high and low groups were compared, the only large difference noted was on Practice 19, with

the high group averaging in the "tried" stage (3.76), while the low group was only in the "interested" stage (2.08).

In Table XXXVII it is noted that one-half (50 percent) of all producers were either unaware of or not interested in using the strip cup, and almost the same number (46 percent) weren't interested in providing separate feeding and loafing area. About one-fifth (19 percent) of all producers had tried using the strip cup and rejected it.

Other Practices

The last three practices in Table XXXVI have been grouped as "other practices" for the purposes of this study, and are discussed separately. Practice 21, "milking system 6-month checked," had an average rating of "planning to try" (3.01) for all producers. The high producers were in the "tried" stage (3.64) for this practice, while the low producers were in the "planning to try" stage (2.88).

Table XXXVII shows that 51 percent were in the "using" stage on Practice 21, while 35 percent were in the "unaware" stage. The large number in the "unaware" stage reflects approximately the number that were milking by hand.

All producers were, on the average, in the "planning to try" stage (3.03) on Practice 22, "professional advice obtained." Table XXXVII shows that 48 percent were in the "using" stage in regard to this practice, while one-half (50 percent) were not even "planning to try" the practice.

All producers were, on the average, in the "tried" stage (4.28) regarding Practice 23, "calves vacinnated for brucellosis, blackleg, etc." The high producers rated in the "using" stage (4.56) with the medium (4.44) and low (3.84) groups in the "tried" stage. Table XXXVII shows that 57 percent of the producers were at the "using" stage, and 35 percent in the "tried" stage for Practice 23.

Relation to Herd Size

Table XXXVIII shows by herd size the total average rating for each of the 23 dairy practices. In comparing the 3 herd-size categories, a straight line positive relation may be suggested between size of herd and management on many practices. While only 10 of the practices in the 1-11 cow category showed average ratings of 3.50 or above, 12 were interested in the 12-29 cow interval, and 20 in the 30-34 cow interval had such ratings. The average practice diffusion rating for the entire group was 3.08, with the 1-11 cow category showing a 2.94, 12-29 cow category a 3.37 and the 30-34 cow category the highest with a 4.48. It should be noted, however, that only one cow fell in the 30-34 cow category.

II. BREEDING OF HEIFERS

Method

All producers were asked how heifers were bred and Table XXXIX gives the results. Sixty percent said they used a bull in natural

TABLE XXXVIII

AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF HENRY COUNTY DAIRYMEN BY HERD SIZE CATEGORIES FOR INDIVIDUAL DAIRY MANAGEMENT PRACTICES*

Dairy Management Practices	All Dairymen Average Rating (N = 75)	1-11 Cows Average Rating (N = 52)	12-29 Cows Average Rating (N = 22)	30-34 Cows Average Rating (N = 1)
1. Artificially inseminated 1/2 or more cows	4.16	4.12	4.23	5.00
2. All cows bred to same breed bull	3.64	3.58	3.73	5.00
3. 60-Day dry period provided cows	4.92	4.90	4.95	5.00
4. 12-14 Month calving period provided	4.99	4.98	5.00	5.00
5. 75 Percent cows fall freshened	2.15	1.75	2.95	5.00
6. 75 Percent herd replacements raised	4.24	4.35	4.09	2.00
7. Adequate milk records kept	0.99	0.87	1.18	3.00
8. Fed cows according to production	1.08	1.02	1.05	5.00
9. Adequate herd records kept	3.72	3.48	4.23	5.00
10. Calves permanently identified	1.40	1.15	1.82	5.00
11. Adequate supply of silage provided	1.11	0.71	1.86	5.00
12. High quality silage provided	0.71	0.33	1.45	4.00
13. Silage supplemented with enough hay	3.28	3.17	3.45	5.00
14. High quality hay provided	3.91	3.73	4.32	4.00
15. Hay and/or silage provided on pasture	3.07	3.00	3.14	5.00
16. Adequate improved pasture provided	4.24	4.17	4.41	4.00
17. Sufficient summer pasture provided	3.68	3.63	3.73	5.00
18. Strip cup always used	2.19	1.81	3.00	4.00
19. Separate feeding and loafing areas provided	2.68	2.75	2.55	2.00
20. Flies systematically controlled	4.83	4.51	4.95	5.00
21. Milking system 6-month checked	3.01	2.42	4.32	5.00
22. Professional advice obtained	2.69	2.56	2.91	5.00
23. Calves vaccinated for brucellosis, etc.	4.28	4.35	4.09	5.00
Total average	3.08	2.94	3.37	4.48

*In the rating scale used: 0 = unaware; 1 = aware of the recommended practice; 2 = interested in the practice; 3 = planning to try the practice; 4 = tried the practice but not using, and 5 = using the practice.

TABLE XXXIX

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY METHOD OF BREEDING HEIFERS*

Method of Breeding Heifers	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Artificially	29	39	9	36	7	28	13	52
Naturally	45	60	15	60	18	72	12	48
Both	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

service on all their heifers. One high producer indicated that he used both artificial and natural breeding. The other 39 percent bred their heifers artificially, with 52 percent of the low producers using artificial insemination and 40 percent of the high producers using this method of breeding at least some heifers.

Type of Bull Used

Table XL reveals that 54 percent (40 producers) were using beef bulls on their heifers, while 45 percent were using dairy bulls. The high and low producers were both breeding about one-half of their heifers to beef and the other one-half to dairy bulls.

III. BREEDING OF COWS

Type of Bull

Table XLI shows that 53 percent were breeding their cows to a beef bull and 47 percent to dairy bulls. No difference is shown between the high and low groups, though the medium group obviously leans toward beef while others favor dairy bulls.

IV. FEEDING OF COWS

Percent of Protein in Dairy Ration

It is noted in Table XLII, that the most common dairy ration used was a 16 percent protein ration, with 27 percent of the producers using it. Twenty-four percent of the producers were using a 12 percent

TABLE XL

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY TYPE OF BULL USED ON HEIFERS*

Type of Bull Used	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not answered	1	1	0	0	1	4	0	0
Dairy	34	45	12	48	9	36	13	52
Beef	40	54	13	52	15	60	12	48
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE XLI

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS IN 1964 BY TYPE OF BULL USED ON COWS*

Type of Bull Used	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Dairy	35	47	13	52	9	36	13	52
Beef	40	53	12	48	16	64	12	48
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE XLII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY PERCENTS OF PROTEIN USED IN DAIRY RATION*

Percent Protein in Dairy Ration	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
7 %	1	1	0	0	0	0	1	4
8 %	1	1	0	0	0	0	1	4
9 %	5	7	2	8	1	4	2	8
10 %	8	11	1	4	4	16	3	12
11 %	3	4	1	4	1	4	1	4
12 %	18	24	6	24	5	20	7	28
13 %	1	1	1	4	0	0	0	0
14 %	12	16	4	16	5	20	3	12
15 %	5	7	3	12	1	4	1	4
16 %	21	28	7	28	8	32	6	24
Total	75	100	25	100	25	100	25	100
Average % Tried	13.0		13.5		13.3		12.4	

*Percents are rounded to nearest whole number.

ration, and the same percentage (24) of the producers were feeding a ration between 12 and 16 percent protein. Twenty-two percent of the producers were feeding a ration with less than 12 percent protein. The high producers generally were feeding a little higher percent protein ration (average of 13.5) than low producers (a 12.4 average).

Method of Providing Concentrates

Ninety-two percent of the producers indicated that they bought their concentrates. Only four producers were mixing their own and two producers were mixing some and buying some. Almost all of these producers took their grain to the mill and had it ground, added supplement and had it mixed at one of the seven mills in the county. Little difference was to be noted between high and low production groups on this point.

Grinding of Hay

Table XLIII shows that 55 percent of the producers ground their hay. Forty percent of the high producers and 60 percent of the low producers were grinding hay. This appears to be an area for some educational work.

Type of Hay Fed

Fifty-seven percent (43 producers) of the dairymen indicated that they fed legume-grass hay. Forty-three percent (32 producers) were using a legume hay. None of the producers reported using all grass hay. Comparisons showed no difference between production groups.

TABLE XLIII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY WHETHER OR NOT THEY GROUND THEIR HAY*

Grinding of Hay	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Did Grind Hay	41	55	10	40	16	64	15	60
Did Not Grind Hay	34	45	15	60	9	36	10	40
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

Method of Supplying Salt and Minerals

Data in Table XLIV show that 85 percent (64 producers) of the dairymen supplied salt and minerals both mixed in the ration and free choice. Eleven percent (8 producers) of the dairymen supplied salt and mineral in the ration only. A comparison of the high and low producers shows that 96 percent of the high compared to 76 percent of the low producers provided salt and minerals both in the ration and free choice.

Storage Capacity Available for Silage

Eighty-six percent (64 producers) of the dairymen had no storage space for silage. The average capacity for those producers with silos was 178 tons. Three medium producers showed a capacity of 208 tons while the 3 high and 5 low producers each had an average capacity of 167 tons.

V. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO AGE

Table XLV shows that the practice diffusion ratings of producers in the two age groups were in the "planning to try" (250-349) stage.

The average diffusion rating for all the producers was 308. The high, medium and low producers had average ratings of 325, 307 and 291 respectively, as mentioned earlier. Slight differences were seen in practice diffusion ratings related to age with a small advantage toward the younger ages in high and medium production groups--the reverse being true for low producers.

TABLE XLIV

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY METHOD OF SUPPLYING SALT AND MINERALS*

Method of Supplying Salt and Minerals	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Mixed in Ration	8	11	1	4	2	8	5	20
Free Choice	3	4	0	0	2	8	1	4
Both	64	85	24	96	21	84	19	76
Other	0	0	0	0	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

TABLE XLV

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS ACCORDING TO AGE GROUPS*

Age Group of Dairymen	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
25-54	38	3.08	14	3.34	11	3.12	13	2.79
55-81	37	3.07	11	3.15	14	3.03	12	3.05
Actual Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

VI. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO EDUCATION LEVELS

Table XLVI shows an increase in practice diffusion ratings with the increase in educational level up to grade 12. There is a slight decrease for the 3 producers with some education at the college level. Those in all three production groups ranged somewhere within the "planning to try" stage, with the exception being the single low producer (2.13) who fell in the "interested" classification.

VII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SIZE OF FARM

Table XLVII shows that the high producers had higher practice diffusion ratings than the low group in each of the farm-size categories, excepting for two low producers in the 400-549 acre category who had an average rating of 3.89. The 3.89 rating was .72 diffusion points higher than the one producer in the high group had, and was the highest average rating noted.

Two medium producers in the 200-399 rated .41 diffusion points higher than the 4 high producers at that interval whose ratings averaged 3.20.

The largest difference between ratings of high and low production groups was seen in the 1-49 acre category where the farmers were 1.35 diffusion points higher than the latter. Small numbers in the interval detracted from the possible implications there.

TABLE XLVI

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY EDUCATIONAL LEVELS*

Educational Grade Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
None	1	2.13	0	---	0	---	1	2.13
1-7	19	2.78	4	3.02	9	2.89	6	2.45
8	21	3.12	4	3.07	10	3.23	7	3.00
9-11	17	3.03	8	3.14	4	2.90	5	2.97
12	14	3.48	7	3.66	2	3.44	5	3.24
1-4 of College	3	3.42	2	3.17	0	---	1	3.91
Actual Total		3.08		3.25		3.07		2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

TABLE XLVII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY SIZE OF FARM CATEGORIES*

Size of Farm Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
1-49	8	2.76	4	3.30	3	2.30	1	1.96
50-99	17	3.15	2	3.35	8	3.20	7	3.03
100-149	26	3.03	7	3.35	10	3.16	9	2.64
150-199	13	3.05	7	3.32	2	2.72	4	3.19
200-399	8	3.12	4	3.20	2	3.61	2	2.69
400-549	3	3.65	1	3.17	0	--	2	3.89
Actual Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommend practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practice.

VIII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO OCCUPATION

Eighty-four percent (63 producers) were classified as full-time farmers, while 16 percent (12 producers) were classisied as part-time farmers. The average diffusion rating for the full-time farmers was 3.07 compared to 3.15 for the part-time farmers. High producers in the part-time category (3.51) had higher ratings than full-time farmers (3.18) while the reverse was true for the low (2.77 and 2.93 respectively).

IX. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SOURCE OF INCOME

Table XLVIII shows that dairying was the major source of income for 27 (35 percent) of the producers, other farm enterprises constituted the major source for 37 (49 percent) and non-farm income for 11 (15 percent) of the producers. The "planning to try" stage was where all producers in the high, medium and low groups rated with no consistent relationship existing between source of income and production and management levels. Surprisingly, low producers who gave dairying as a major source of income rated higher (3.38) than their counterparts in the higher group (3.16). Non-farm high producers rated at the highest management level indicated (3.48).

TABLE XLVIII

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY MAJOR SOURCE OF INCOME*

Major Source of Income	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
Dairying	27	3.19	9	3.16	11	3.09	1	3.38
Other Farm	37	2.96	11	3.23	10	3.12	16	2.68
Non-farm	11	3.20	5	3.48	4	2.89	2	3.13
Actual Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

X. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO SEX

Fourteen of the respondents interviewed were female; however, only three were solely responsible for the dairy operation. Two of the women were in the high production group and one was in the low group. A diffusion rating of 3.08 for male and 3.09 for female reflected no apparent relationship between sex and management.

XI. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO GROSS FAMILY INCOME

In Table XLIX it is noted that practice diffusion ratings increased as the levels of gross family income went up. Eighty-five percent (64 producers) of the dairymen were in the "planning to try" stage with a rating of 3.01 in the income range of $2000-$7999. Twelve percent (9 producers) were in the "tried" stage with a rating of 3.65 in the $8000-$29,999 income range. High producers in the top category rated slightly lower than others in management, though small numbers are involved. It appears that producers with higher gross family income tend to follow more recommended production and management practices.

XII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO DAIRY HERD RATING

Table L suggests a slight positive relation between the way the producers rated their herds and their management level on the rating

TABLE XLIX

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY TOTAL GROSS FAMILY INCOME REPORTED*

Total Gross Family Income Category	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
Not Answered	2	2.70	--	---	--	--	2	2.70
$2000-7999	64	3.01	21	3.21	22	2.96	21	2.86
8000-29,999	9	3.65	4	3.50	3	3.88	2	3.63
Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practices.

TABLE L

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY RATINGS THEY GAVE THEIR OWN DAIRY HERDS AS TO CONDITION AND VALUE*

Ratings Dairymen Gave Their Own Herds	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
Not Answered	5	3.18	0	---	4	3.22	1	3.04
Poor	2	2.81	2	2.81	0	---	0	---
Fair	32	2.95	7	2.98	14	3.10	11	2.73
Good	33	3.19	14	3.43	7	2.92	12	3.06
Excellent	3	3.29	2	3.42	0	---	1	3.04
Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unaware; 1 = aware of 23 recommend practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using; and 5 = using the practice.

scale. Eight-eight percent of the producers rated the value of their herds either "fair" or "good". Thirty-two producers rating their herds "fair" had a practice diffusion score of 2.95, while 33 producers rating their herds "good" had an average score of 3.19. Three producers rated their herds "excellent" and had a diffusion score of 3.29, while 2 producers rating their herds as "poor" scored 2.81.

All average ratings in this group were in the "planning to try" stage. It seemed that most of the producers wanted to rate their herds "average" which was not listed in the ratings.

XIII. THE RELATION OF PRODUCTION AND MANAGEMENT LEVELS TO INTEREST IN IMPROVING DAIRY MANAGEMENT

All dairymen were rated by the interviewer as to his judgement of their interest in improving their dairy management. Table LI shows the producers average diffusion ratings in the relation to the interest in improving as seen by the interviewer.

A higher average practice diffusion rating is shown for those who were more interested as it appeared to the interviewer. On the average the "not interested or indifferent" group scored 2.75 compared to 3.04 for the "somewhat interested" and 3.44 for the "very interested". The high producers scored .36 points above the low producers who appeared to be "not interested or indifferent" and .43 points higher than those who were "somewhat interested". The reverse was true for the "very interested" where the low producers scored .17 points higher--indicating their possible receptiveness to extension educational overtures.

TABLE LI

NUMBERS AND AVERAGE DAIRY MANAGEMENT PRACTICE DIFFUSION RATINGS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY INTEREST OF RESPONDENT IN IMPROVING HIS DAIRY MANAGEMENT*

Degree of Interest in Improving Dairy Management Level	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	Average Rating	No.	Average Rating	No.	Average Rating	No.	Average Rating
Not Interested	14	2.75	2	3.11	4	2.58	8	2.75
Somewhat Interested	43	3.04	15	3.14	16	3.19	12	2.71
Very Interested	18	3.44	8	3.50	5	3.10	5	3.67
Total	75	3.08	25	3.25	25	3.07	25	2.91

*In the rating scale used: 0 = unware; 1 = aware of 23 recommended practices; 2 = interested in the practices; 3 = planning to try the practices; 4 = tried the practices but not using them; and 5 = using the practices.

CHAPTER III

SUMMARY

A total of 75 Henry County manufacturing milk producers who produced milk in 1964 were interviewed regarding their dairy production practices.

Using 1964 information obtained from the Paris Pet Milk Company, the producers were divided into three equal production groups (high, medium and low) according to average annual butterfat production per cow.

Producers were questioned concerning the use of 23 recommended production practices, and, as a result, given dairy production management practice diffusion ratings ranging from 0, "unaware" to 5, "using". Average practice diffusion ratings were established for all producers and for the 3 production groups. The practice diffusion ratings were used in comparing the management levels of high, medium, low, and all producers in relation to: 1) production; 2) stage in the diffusion process; 3) herd size; 4) age; 5) educational level; 6) size of farm; 7) occupation; 8) source of income; 9) sex; 10) gross family income; 11) herd ratings, and 12) interest in improving their dairy management.

In addition to information regarding the 23 recommended practices, other data were obtained regarding breeding and feeding practices. For example, questions were asked to reveal methods used for breeding heifers

and the type(s) of bulls (dairy or beef) used on heifers and cows.

Feeding information obtained in addition to that included in the 23 recommended practices had to do with: 1) the percent of protein in the dairy ration; 2) methods of providing concentrates; 3) whether hay was ground or not; 4) types of hay fed; 5) methods of supplying salt and minerals, and 6) the storage capacity available for silage.

Information regarding management practices of manufacturing milk producers, especially comparative information between low and high producers in Tennessee was limited as was found to be true in most other areas. A study in Virginia, one in Mississippi, and a mail-out questionnaire in Tennessee to twenty-five milk plants gave relatively little specific information relative to practices used and not used by dairymen in Henry County.

I. REVIEW OF FINDINGS

The following is a brief summary of the major findings as related to production and management practices of manufacturing milk producers in Henry County:

1. The high producers showed a higher average practice diffusion rating than the low producers on 15 of the 23 practices considered.

2. The high producers had ratings of .72 diffusion points, or more, greater than the low producers on the following 7 practices: a) 75 percent of the cows fall-freshened; b) silage supplemented with enough hay; c) high quality hay provided; d) adequate improved pasture

provided; e) separate feeding and loafing areas provided; f) milking system six-months checked; and g) calves vaccinated for brucellosis, etc.

3. The incidence of dairying in the "unaware" stage on the 23 recommended practices, on the average, was 24 percent, while the average "using" percent was only 47.

4. Less than 8 percent were using the following three practices: a) adequate milk records kept; b) fed cows according to production, and c) adequate supply of silage provided.

5. Less than 20 percent of the dairymen were freshening cows in the fall--this practice being of debatable value for manufacturing milk producers in recent years.

6. Fifty percent were unaware of the practice "feeding according to production".

7. The larger herds showed the highest management levels.

8. Both high and low producers were using beef bulls to breed cows and heifers in about 50 percent of the cases.

9. High producers tended to feed a slightly higher protein ration than the other two groups.

10. Sixty percent of the low producers and 40 percent of the high producers follow the unprofitable practice of grinding hay.

11. More of the high producers provided salt and minerals both in the ration and free choice than the low.

12. Younger dairymen tended to have a slightly higher practice diffusion rating than older ones.

13. Dairymen with higher levels of education tended to have higher practice diffusion ratings.

14. The practice diffusion ratings tended to increase with the rise in gross family income.

15. Eighty-eight percent of the producers felt that their herds were about "average" and rated them as either "good" or "fair".

16. More than one-third of the producers indicated they had tried but were not now using the following three practices: a) calves vaccinated for brucellosis, etc.; b) all cows bred to same breed bull, and c) artificially inseminated one-half or more of cows.

II. IMPLICATIONS

Implications from this study are as follows:

1. The data indicated a strong relationship between recommended practice adoption and level of production verifying the importance of many practices were, in the main, not being used.

2. The bundle of practices relating to record keeping offers an educational challenge in extension work with all producers.

3. Further evaluation of data obtained through the survey and consideration of the findings relating to recommended practices should be helpful when planning to further educational dairy work in Henry County.

PROBLEM C:

FACTORS INFLUENCING DAIRY MANAGEMENT PRACTICE ADOPTION BY HENRY COUNTY MANUFACTURING MILK PRODUCERS

A Special Problem in Lieu of Thesis

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

John W. F. Caldwell

June 1966

CHAPTER I

INTRODUCTION

The two previous problems in this series were concerned with the characteristics and management practices of Henry County manufacturing milk producers. Further analysis of the data collected in this study is necessary in order to identify the factors influencing them to adopt or not to adopt recommended dairy management practices.

Dairying is an important agricultural enterprise in Henry County and represents almost 15 percent of the total county farm income. In 1959 dairy products ranked third in enterprise value being exceeded only by the sale of cattle and calves and field crops (5:217)*. The dairy industry has undergone many changes and made rapid growth during the past 15 years. One of the significant happenings in this period was the location of a Pet Milk Company buying station at Paris in 1950 which provided a market for milk for manufacturing purposes. Another factor affecting the manufacturing milk producers in the county was the drive put on by the Sealtest Milk Company during the mid 1950's, for Grade A milk producers. The number of Grade A producers increased from 23 in 1955 to 60 in 1963 (17:2). Much of this increase was from producers who had previously sold manufacturing milk. At the time of the present study there were 132 Henry County producers selling to the Pet Milk Company in Paris.

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*Numbers in parentheses refer to numbered references in the bibliography; those after the colon are page numbers.

Members of the County Extension staff have made considerable effort through the years to present educational information to Henry County dairymen. Some of the methods that have been used include: demonstrations; tours; farm management schools; dairy meetings; circular letters; news articles; radio programs; county dairy shows, and individual work with the producers. Also, a 4-H dairy-calf chain was started in November, 1965. Attempts have been made to evaluate the results of this teaching, but no previous attempt has been made to determine what factors have influenced Manufacturing Milk Producers to adopt or not to adopt recommended dairy management practices.

I. PURPOSE OF THE STUDY

The purpose of this study was to try to determine what factors, other than those identified earlier, had influenced manufacturing milk producers in Henry County to adopt or not adopt recommended dairy management practices.

II. REVIEW OF LITERATURE

Studies (1:4) have shown that farmers adopt new ideas or practices at different times. They tend to be at different stages in the adoption process at different times as it may relate to a given, recommended, proven practice or bundle of practices.

The adoption process is a mental process through which an individual passes from first hearing about a new idea to its final adoption. Authorities generally agree that the stages in the adoption process

include the following: 1) awareness (referred to in this study as "aware"); 2) interest (hereafter referred to as "interested"); 3) evaluation (referred to hereafter as "planning to try"); 4) trial (called "tried" in this study), and 5) adoption (hereinafter called "using"). Research has indicated, in general terms, that as one proceeds from unawareness to "using" that more and more intensive or personal contacts are required if adoption of a practice is to result.

At the "aware" and "interested" stages, mass media sources, such as demonstrations, farm magazines, newspapers, and radio are most important. At the "planning to try" and "tried" stages, neighbors and friends are generally more important influences than mass media. When farmers move closer to the "using" stage, personal contacts with representatives of agricultural agencies are of more importance, but may still be secondary to neighbors and friends.

Research findings (1:6) generally indicate that farmers who are the first to adopt have the following: 1) more formal education than others; 2) favorable attitudes toward extension and other educational agencies; 3) more participation in general farm organizations; 4) children in 4-H clubs or vocational agriculture; 5) a high value placed on individual achievement, and 6) family members who participate in the decision making and the operation of the farm.

III. METHODS

A list of manufacturing milk producers in Henry County was brought up to date and information concerning total milk sold, butterfat

test, and bacterial count figures for 1964 were obtained from the local manufacturing milk plant.

A random sample of 75 producers was taken from the 132 manufacturing milk producers in Henry County. Each of these producers was contacted personally and interviewed using a schedule (see Appendix) consisting of questions designed to reveal characteristics, production practices, and factors influencing practice adoption. This study has to do with those questions related to the factors influencing practice adoption not already dealt with in a related problem above. The 75 producers were divided into thirds according to average 1964 butterfat production figures in pounds per cow. The high group (25 producers) had average butterfat production ranging downward from 454 to 261 pounds; the medium group (25 producers) had production from 260 to 208 pounds; and the low group (25 producers) were in a range from 200 down to 77 pounds. Main comparisons in the present study will be between high and low producers. Analysis will be based on simple numbers and percents, and average shown where pertinent. The medium group will be considered when appropriate.

CHAPTER II

FINDINGS

I. THINGS LIKED ABOUT MANUFACTURING MILK PRODUCTION

Each producer was asked to tell what he liked most about manufacturing milk production. Table LII shows that 92 percent (69 dairymen) said that it provided a regular source of income and is a stable form of agriculture. Four of the producers gave as their answer, "I love dairy cattle." Two of these were in the high group and one each in the medium and low groups. Two other answers given by high producers were "It provides me with a marketable product" and "I like being my own boss."

The fact that 92 percent milked mainly for the income may be one of the reasons why there had been a decrease over the most recent 12 years in the number of manufacturing milk producers. More profitable and less confining sources of income off the farm may have given those with smaller investments in their milking operations a chance to stop milking.

II. THINGS DISLIKED ABOUT MANUFACTURING MILK PRODUCTION

Forty-eight percent of all dairymen gave the one thing they disliked about manufacturing milk production as, "Too confining." It is shown in Table LIII that the high, medium and low groups each had 12 producers that answered in this way.

TABLE LII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS MENTIONING THINGS THEY LIKED MOST ABOUT MANUFACTURING MILK PRODUCTION*

Thing Liked Most About Manufacturing Milk Production	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
It provides me with a marketable product	1	1	1	4	0	0	0	0
It provides me a regular source of income and is a stable form of agriculture	69	92	21	84	24	96	24	96
I love dairy cattle	4	6	2	8	1	4	1	4
Being my own boss	1	1	1	4	0	0	0	0
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

TABLE LIII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS MENTIONING THINGS THEY DISLIKED MOST ABOUT MANUFACTURING MILK PRODUCTION

Think Disliked Most About Manufacturing Milk Production	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Too confining	36	48	12	48	12	48	12	48
I'm physically unable to do the job right	1	1	1	4	0	0	0	0
The return on my time and money is inadequate	11	15	5	20	2	8	4	16
My facilities aren't suited to it	3	4	0	0	2	8	1	4
It takes too large an investment	1	1	0	0	0	0	1	4
No dislike	6	8	2	8	1	4	3	12
Other	17	23	5	20	8	32	4	16
Total	75	100	25	100	25	100	25	100

*Percents are rounded to the nearest whole number.

Twenty-three percent of all dairymen reported "other" major dislikes other than the ones shown in Table LIII, some of these related to weather conditions around the barn, and small size of their operation.

"The return on my time and money is inadequate" was the answer given by 15 per cent. "My facilities aren't suited" was mentioned by 3 producers, none of which were in the high group. One producer in the high group felt that he was physically unable to do the job, and one in the low group said, "It takes too large an investment."

It is noted that 8 percent (6 producers) of the dairymen did not have a particular dislike. Two of these were in the high group and 3 were in the low group.

III. REASONS WHY MANUFACTURING MILK PRODUCERS DO NOT ADOPT RECOMMENDED PRACTICES

In order to determine the relative importance of some reasons as to why manufacturing milk producers do not adopt recommended dairy production practices, each milk producer was asked to select the three most important reasons from a set of ten. This was done by giving the respondent a set of ten cards, with a reason typed on each, from which he made his decision. After the three reasons were selected, he was asked to rank them in order of importance as to why he thought manufacturing milk producers do not adopt recommended dairy production practices, and to give any other reasons he felt to be important.

Table LIV shows a combined summary of numbers and percents of all dairymen, high, medium and low producers who ranked each reason as

TABLE LIV

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS RATING VARIOUS REASONS WHY MANUFACTURING MILK PRODUCERS DO NOT ADOPT RECOMMENDED DAIRY PRACTICES FIRST, SECOND OR THIRD RANKING*

Reasons Why Dairymen Do Not Adopt Recommended Practices**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Not Answered	12	16	3	12	3	12	6	24
Cost of practice outwieghs possible benefits	47	63	15	60	17	68	15	60
Facilities not suited	45	60	17	68	13	52	15	60
More rewarding activities claim owners time and money	43	57	16	64	12	48	15	60
Don't have the technical knowledge needed	28	37	10	40	8	32	10	40
Physically unable to do supervision and management of job needed	18	24	6	24	4	24	6	24
Expect to sell dairy herd	13	17	4	16	6	24	3	12
Don't believe practices are sound	7	9	3	12	2	8	2	8
Have tried and found unsatifactory	6	8	1	4	4	16	1	4
Expect to move away from farm	4	5	0	0	2	8	2	8
Uncertainty of ownership in undivided estate	2	3	0	0	2	8	0	0

*Percents are rounded to the nearest whole number.

**Numbers and percents do not add up to totals since all dairymen gave three most important reasons.

either first, second, or third in importance. An examination of the data reveals that there was very little difference between the high and low producer with regard to selection of reasons. In fact, the highest difference found on any reason between the three production groups was a difference of 4 producers which was found in two instances. It also was noted that more producers selected the three reasons that ranked at the top, than a combination of the other seven reasons considered.

Reason 1, "cost of practices outweighs possible benefits," was selected by 63 percent (47 producers) of all dairymen. Some of the respondents mentioned some practices they felt were in this category. Those most often heard were: 1) providing silage; 2) using artificial insemination; 3) producing alfalfa hay, and 4) feeding 16-18 percent protein feeds.

Reason 2, "facilities not suited," was selected by 60 percent (45 producers) of all dairymen. High producers (68 percent) mentioned this item most frequently. Some of the practices that producers indicated dairymen had not adopted due to "lack of suitable facilities" included: 1) providing separate feeding and loafing areas; 2) providing adequate amount of improved pasture, and 3) feeding cows according to production.

Reason 3, "more rewarding activities claim owner's time and money," was selected by 57 percent (43 producers) of all dairymen. Sixty-four percent of the high producers selected this reason, 48 percent of the medium, and 60 percent of the low producers selected it.

Some of the comments regarding this reason were "We don't have the money at the time I want to make certain changes" and "I just don't get started on some of the practices that need attention."

Reason 4, "don't have the technical knowledge needed," was selected by 37 percent (28 producers) of all the dairymen. It seemed that the producers mentioning this were the ones with the higher educational level.

The six remaining reasons (Table LIV) and percents of producers mentioned them were:

Reason 5, "physically unable to do supervision and management of job needed," (24 percent)

Reason 6, "expect to sell dairy herd," (17 percent)

Reason 7, "don't believe practices are sound," (9 percent)

Reason 8, "have tried and found unsatisfactory," (8 percent)

Reason 9, "expect to move away from the farm," (5 percent)

Reason 10, "uncertainty of ownership in undivided estate," (3 percent).

Each respondent was asked whether or not he thought there were other reasons why manufacturing milk producers do not adopt recommended dairy production practices. Twenty-five percent (19 producers) gave other reasons. About half of these were "not enough initiative" or "too lazy." The other reasons were related to restatements of the ten reasons mentioned above.

IV. DAIRY MANAGEMENT ADVICE SOUGHT

Farmers obtain information from many sources (1:7). Research has shown that most sources used by farmers vary with stages in the adoption process. Table LV shows that 80 percent of the dairymen interviewed sought advice concerning dairy management. Each dairyman talked to an average of 2.5 individuals. The high producers talked to an average of 1.9, the medium 2.3, and the low 3.1.

Seventy-seven percent of all dairymen ranked the "milk plant field man" as their first choice when they sought advice concerning dairy management. This is understandable since these producers sought advice frequently concerning milk coolers and equipment and this in most cases was serviced by the field man. In addition to this he makes regular visits to all of these producers. All three production groups agreed on this first choice with 76 percent of the high, 68 percent of the medium, and 88 percent of the low producers seeking advice from this source.

"Neighbor or friend" rated second with 39 percent of the producers mentioning this source. A higher percent of the low producers (56 percent) used this source than did the medium (32 percent) or the high producers (24 percent). "Feed dealer or salesman" was second choice for the high producer (28 percent) and the medium producer (40 percent), with 33 percent of all dairymen seeking his advice and making him third in importance as a source of help.

TABLE LV

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY FREQUENCY WITH WHICH THEY REPORTED HAVING SOUGHT ADVICE CONCERNING DAIRY MANAGEMENT OF CERTAIN INDIVIDUALS*

Person from Whom Advice Was Sought**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None sought	15	20	6	24	8	32	1	4
Neighbor or friend	28	39	6	24	8	32	14	56
Local veterinarian	22	29	5	20	6	24	11	44
Milk plant fieldman	58	77	19	76	17	68	22	88
Health department sanitarian	5	7	1	4	1	4	3	12
County agent	13	17	4	16	5	20	4	16
Feed dealer or salesman	25	33	7	28	10	40	8	32
Banker or PCA representative	4	5	0	0	2	8	2	8
DHIA supervisor or ABA technician	20	27	4	16	5	20	11	44
Extension dairyman	6	8	1	4	3	12	2	8
Vo-Ag teacher	3	4	1	4	1	4	1	4
Average Number of Individuals Giving Advice	2.5		1.9		2.3		3.1	

*Percents are rounded to nearest whole number.

**Numbers and percents will neither add up to the total of 75 dairymen interviewed nor to 100 percent since dairymen talked to one or more individuals.

The fourth ranking individual to give advice was the "local veterinarian." Forty-four percent of the low producers, 24 percent of the medium and 20 percent of the high producers received helpful information from this person. The total of 29 percent consulting this source may indicate that most of this was for animal health rather than seeking management advice.

The other sources of advice sought and their percentages were: 1) DHIA supervisor or ABA technician (27 percent); 2) county agent (17 percent); 3) extension dairymen (8 percent); 4) health department sanitarian (7 percent), and 5) Vo-ag teacher (4 percent).

V. ADDITIONAL SOURCES OF DAIRY MANAGEMENT INFORMATION USED

Ninety-nine percent of all dairymen interviewed indicated that they received certain dairy management information from other sources as listed in Table LVI. All dairymen reported that they received information from an average of 3.6 sources. The high group averaged 3.2, the medium 3.9, and the low 3.7 sources.

Farm magazines were by far the most popular source reported, with 88 percent of all producers indicating this source. The low group reported 96 percent, the medium group 92 percent, while the high group was lowest with 76 percent.

It was interesting to note that radio rated second as a source of information with 71 percent of all producers interviewed and daily newspapers running a close third with 65 percent. The groups ranged

TABLE LVI

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY FREQUENCY WITH WHICH THEY REPORTED RECEIVING INFORMATION USEFUL IN THE MANAGEMENT OF THEIR DAIRY HERDS FROM DIFFERENT SOURCES*

Source of Useful Information**	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
None	1	1	1	4	0	0	0	0
Farm magazines	66	88	19	76	23	92	24	96
Radio	53	71	16	64	18	72	19	76
Daily newspapers	49	65	15	60	18	72	16	64
University bulletins and publications	33	44	12	48	8	32	13	52
Commercial feed company bulletins	22	29	8	32	8	32	6	24
Farm meetings	15	20	4	16	6	24	5	20
Television	15	20	2	8	7	28	6	24
Weekly newspapers	9	12	4	16	3	12	2	8
Field days	8	11	1	4	6	24	1	4
Newsletters	1	1	0	0	0	0	1	4
Average Number of Sources of Information	3.6		3.2		3.9		3.7	

*Percents are rounded to nearest whole number.

**Numbers and percents will neither add up to the total of 75 dairymen interviewed nor 100 percent since dairymen received information from more than one source.

from 60 to 76 percent with the low producers using these sources a little more than the high producers.

University bulletins and publications was another source of information with 44 percent of all dairymen reporting its use. Little difference was noted between the high and low groups relative to this source. Twenty-nine percent of the producers received information from commercial feed company bulletins.

Farm meetings and television were of equal importance as reported by 20 percent of the dairymen. The low and medium producers reported about twice as much use as thse sources as did the high producers.

Twelve percent of the producers reported weekly newspapers, 11 percent reported field days, and one producer reported newsletters as a source of information.

From Table LVI it is interesting to note that 7 out of the 10 sources of information showed a higher percent use by the low producers than the high producers. Also, the medium producers showed a higher percent use in 6 of the 10 sources than the high producers.

VI. DEGREE TO WHICH INTERVIEWER WAS FAMILIAR WITH DAIRY SITUATION

Table LVII shows that the interviewer was "very familiar" or "fairly familier" with 44 percent of the high producer situations. It further shows that the interviewer was "not familiar" or "not very familiar" with 69 percent of the total producers in this study; this includes 88 percent of the medium producers and 64 percent of the low

TABLE LVII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS BY DEGREE TO WHICH INTERVIEWER WAS FAMILIAR WITH THE DAIRY SITUATIONS OF THE RESPONDENTS*

Degree to Which Interviewer Knew Dairy Situation	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Very Familiar	8	11	5	20	1	4	2	8
Fairly Familiar	15	20	6	24	2	8	7	28
Not Very Familiar	43	57	11	44	20	80	12	48
Not Familiar	9	12	3	12	2	8	4	16
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

producers. The fact that high producers were, in the main, better known is consistent with findings reported elsewhere (21:25).

VII. PRODUCER'S NEED FOR INCREASING ATTENTION TO MANAGEMENT OF HERD

In Table LVIII the interviewer's opinion was that 36 of the 42 dairymen, known well enough to evaluate, "should pay more attention" to the management of their dairy herds. Eight of these were high producers and 14 each were in the medium and low groups. The interviewer felt that the one producer in the high group who was doing an outstanding job of management, did not need to be concerned with better management, whereas 5 producers in the medium and low groups were either out of or going out of the production of manufacturing milk and would not benefit by being concerned with management.

The interviewer was "uncertain" about 44 percent of the producers as shown in Table LVIII.

TABLE LVIII

NUMBERS AND PERCENTS OF ALL HENRY COUNTY DAIRYMEN INTERVIEWED, HIGH, MEDIUM AND LOW PRODUCERS WHO SHOULD, IN THE INTERVIEWER'S OPINION, PAY MORE ATTENTION TO THE MANAGEMENT OF THEIR DAIRY HERD*

Attention Paid to Management of Dairy Herd	All Dairymen Interviewed		High Producers		Medium Producers		Low Producers	
	No.	%	No.	%	No.	%	No.	%
Should Pay more Attention	36	48	8	32	14	56	14	56
Should Not Pay More Attention	6	8	1	4	3	12	2	8
Uncertain	33	44	16	64	8	32	9	36
Total	75	100	25	100	25	100	25	100

*Percents are rounded to nearest whole number.

CHAPTER III

SUMMARY

This study of 75 manufacturing milk producers in Henry County was made to determine the factors not already identified that have influenced these dairymen to adopt and use or not adopt recommended dairy management practices.

A review of other studies revealed the following general points:

1. Farmers tend to adopt new ideas or practices at different times.

2. They tend to be at different stages in the adoption process on the same and different practices at any one period of time.

3. Mass media sources are most important at the awareness and interest stages.

4. Neighbors and friends are more important than mass media at the evaluation and trial stages.

5. Personal contact becomes of greater value in the more advanced stages of the adoption process.

6. Agricultural agencies' representatives are influential in helping to affect individuals who are closest to the adoption of practices.

Dairymen in the study were divided into three equal groups of 25 producers in high, medium and low groups according to butterfat production per cow, and the factors influencing dairy management

practice adoption of these groups were considered based on data obtained from personal interviews.

I. REVIEW OF FINDINGS

The following is a summary of the information concerning factors affecting practice adoption by the Henry County manufacturing milk producers in this study:

1. Of the things liked most by manufacturing milk producers, "the regular income," was rated first by 92 percent of the dairymen (84 percent of the high and 96 percent of the low producers).

2. "Confinement" was the greatest dislike mentioned by 48 percent of the producers in each of the three production groups.

3. Manufacturing milk producers interviewed felt that recommended production practices most often are not adopted because the "cost outweighs the benefits" (63 percent reporting), "facilities not suited" (60 percent reporting), and "more rewarding activities claim owners time and money" (57 percent reporting).

4. Only 9 percent of respondents felt that the recommended management practices were not sound.

5. Thirty-seven percent of the producers interviewed felt that "lack of technical knowledge needed" was the reason dairymen did not adopt practices.

6. "Milk plant fieldman" was rated as first choice when seeking advice by 75 percent of the dairymen.

7. Nearly all producers (88 percent) listed farm magazines most frequently as a source of additional useful dairying information. The low group reported 96 percent compared to 76 percent for the high group in their listing of this source of additional information first.

8. Seventy-one percent of the dairymen rated radio as their second best source of information.

9. The interviewer was not familiar with 69 percent of the total producers dairy situations.

10. In the interviewer's opinion, most manufacturing milk producers (92 percent) that were known well enough to evaluate, should pay more attention to the management of their dairy herds.

II. IMPLICATIONS

The information obtained in the study of manufacturing milk producers in Henry County leads to the following implications for use in Extension program planning:

1. Ninety-two percent of the dairymen sold manufacturing milk for the regular income, though about one-half did not like confinement; therefore, it is assumed that the majority would be interested in increasing their net income.

2. Careful consideration should be given to the major reasons given by respondents as to why dairymen did not adopt recommended dairy production practices.

3. Producers who felt that there was a need for more technical knowledge should be contacted concerning the dairy farm management

week and other opportunities.

4. The importance of working closely with the milk plant field man should not be overlooked as an avenue for encouraging recommended practice adoption.

5. Manufacturing milk producers should be contacted through the various sources of information that they indicated they used most.

6. All manufacturing milk producers in Henry County should be familiarized with the information from this study.

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APPENDIX

THE AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF TENNESSEE
Knoxville, Tennessee

TENNESSEE MANUFACTURING MILK PRODUCERS SURVEY

INTRODUCTION: I am helping with a survey that is being made by the University of Tennessee. The purpose is to obtain information to use in planning programs helpful to manufacturing milk producers. The answers you give will be added to those given by other dairymen who are being interviewed in this county and other parts of the state to get a complete picture of the dairy situation. Could I have a little of your time to go over these questions?

1. Total acres in farm_____ Cropland acres_____

2. Major occupation of the respondent
   a. Full-time farmer ____
   b. Part-time farmer____
   c. Business (specify)____
   d. Professional (specify)____
   e. Wage earner____
   f. Housewife or widow____
   g. Retired____
   h. Other (specify)____

3. Is dairying your major source of income?
   a. Yes____ b. No____

4. If your answer to question 3 above is NO, what is your major source of income?_____

5. Would you please complete this sentence? (Hand respondent card.)
   "The thing I <u>like</u> most about manufacturing milk production is_____

   _____

   _____

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them, and ask him "which is <u>most</u> important?" Then underscore it.

6. Would you please complete this sentence? (Hand respondent card.)
   "The thing I <u>dislike</u> most about manufacturing milk production is____

   _____

TO THE INTERVIEWER: If the respondent mentions more than one thing, write down all of them, and ask him "Which is <u>most</u> important?" Then underscore it.

7. We have listed on these cards some reasons why Manufacturing Milk Producers do not adopt recommended dairy production practices. (Hand respondent set of cards.) Now, here is what we would like you to do:

   a. Please look through all of the cards; read each one one; and pick out the three cards that show why you believe Manufacturing Milk Production Producers do not use better production practices. After you have selected the three cards, please hand me the rest.

   b. Now, these three reasons are not of the same importance; so please go through them and decide which one is probably of most importance. Please give me the number on the back of the card. Also, please do this with the other two cards.

Rank	1	2	3
Card Number			

Are there any other reasons why you believe dairy farmers do not adopt recommended dairy production practices?

_____

_____

TO THE INTERVIEWER: The purpose of this next question is to find out if the respondent--

(1) is aware of certain recommended practices

(2) is interested in using them

(3) has tried them

(4) is still using them, or will use them when the need arises

(5) and his reasons for never trying the practices, or for not using them after trying them.

INTERVIEWER hand each card to respondent separately after saying: "I have here a set of cards. On each card is a dairy production practice. Would you read each card and tell me whether or not you have tried that practice?" (Check Yes or No in the "Has Tried" column below.)

In his reply, the respondent may also answer the other four points. If not, interviewer will ask appropriate questions to obtain the answers. Check in appropriate columns below.

8. Recommended Dairy Production Practices	Read or Heard of		Interested In		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(1) Using artificial insemination in the breeding of 50% or more of your cows (exclude heifers)								
i. Reasons for never trying practice OR not using after trying								
(2) Breeding each bull to a bull of same breed								
i. Reasons for never trying practice OR not using after trying								
(3) Having a basis for weighing feed and grain according to production with special attention to assure that high producers receive enough grain (i.e., 1-3 or 1-4)								
i. Reasons for never trying practice OR not using after trying								
(4) Providing an adequate (6-8 tons annually per cow) supply of silage (when fed with hay)								
i. Reasons for never trying practice OR not using after trying								
(5) Providing high quality silage (i.e., corn cut in dent stage, alfalfa in early bloom stage and grasses in boot stage)								
i. Reasons for never trying practice OR not using after trying								

	Read or Heard of		Interested In		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(6) Providing enough roughage (2½ lb. of hay equivalent per cwt. of body weight daily) by supplementing silage with hay (1-2 tons annually per cow)								
i. Reasons for never trying practice OR not using after trying								
(7) Providing high quality hay (i.e., alfalfa cut at bud to 1/10 bloom stage, grasses and small grains in boot stage)								
i. Reasons for never trying practice OR not using after trying								
(8) Providing hay and/or silage when cows are on pasture								
i. Reasons for never trying practice OR not using after trying								
(9) Providing an adequate amount (1-2 acres per cow) of improved pasture (e.g., orchard grass and ladino)								
i. Reasons for never trying practice OR not using after trying								
(10) Providing sufficient summer pasture (1/4 to 1/2 A. per cow)								
i. Reasons for never trying practice OR not using after trying								

	Read or Heard of		Interested In		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(11) Keeping adequate milk production records on a per cow basis (i.e., D.H.I.R., D.H.I.A., W.A.D.A.M.								
i. Reasons for never trying practice OR not using after trying								
(12) Raising at least 75% of all herd replacements								
i. Reasons for never trying practice OR not using after trying								
(13) Annually providing an average of sixty days per cow for dry period								
i. Reasons for never trying practice OR not using after trying								
(14) Maintaining a 12-14 month calving period for each cow in the herd								
i. Reasons for never trying practice OR not using after trying								
(15) Having at least 75% of cows in the herd freshen in the fall								
i. Reasons for never trying practice or not using after trying								
(16) Permanently identifying each calf as to sire and dam								
i. Reasons for never trying practice OR not using after trying								

	Read or Heard of		Interested In		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(17) Vaccinating all calves (at 4-10 months of age) for brucellosis, blackleg, etc.								

i. Reasons <u>for never</u> trying practice OR not using after trying

---

(18) Keeping adequate herd records (a) Calving (b) Health (c) Heat								

i. Reasons <u>for never</u> trying practice OR not using after trying

---

(19) Using a strip cup on each cow before each milking								

i. Reasons <u>for never</u> trying practice OR not using after trying

---

(20) Having a routine check made (every 6 mo.) of milking system as to recommended vacuum level and pulsation rate (varies with manufacturer)								

i. Reasons <u>for never</u> trying practice OR not using after trying

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(21) Providing separate feeding and loafing areas for the milking herd								

i. Reasons <u>for never</u> trying practice OR not using after trying

---

	Read or Heard of		Interested In		Is Using or Will Use		Has Tried	
	Yes (a)	No (b)	Yes (c)	No (d)	Yes (e)	No (f)	Yes (g)	No (h)
(22) Systematically using a recommended method of fly control around barns, loafing and milking areas								

i. Reasons for never trying practice OR not using after trying

_____

ii. TO INTERVIEWER: If recommended method is used, explain the system mentioned: _____

_____

(23) Getting the advice of professional dairy workers								

i. Reasons for never trying practice OR not using after trying

_____

9. During the past year, have you talked with anyone about the management of your dairy herd?
   a. Yes_____ b. No_____

TO THE INTERVIEWER: If No, skip to question 11. If Yes, ask question 10 first.

10. With whom have you talked? (Check one or more of the following. If respondent gives names, write them at the side and check list later.)

a. County agent_____
b. Extension dairyman_____
c. Local veterinarian_____
d. D.H.I.A. supervisor_____
e. A.B.A. technician_____
f. Vo-Ag teacher_____
g. Milk plant field man_____
h. Feed dealer or salesman_____
i. Banker or PCA representative_____
j. Neighbor or friend (other dairyman)_____
k. Health department sanitarian_____
l. Other (specify)_____

11. From which of the following other sources did you receive information useful in the management of your dairy herd during the past year?

a. Univ. bulletins and publications____
b. Commercial (feed company) bulletins____
c. Farm magazines____
d. Daily newspapers____
e. Weekly newspapers____
f. Radio____
g. Television____
h. Farm meetings____
i. Field days and tours____
j. Newsletters____

12. What was the highest grade level that you completed? (Circle one)

0	1 2 3 4 5 6 7 8	9 10 11 12	1 2 3 4	Bachelor's	Master's	Doctor's
None	Grade Sch.	H. S.	Col. Underg.	Degree	Degree	Degree

13. Age of respondent?

a. Under 25_____
b. 25-34 _____
c. 35-44 _____
d. 45-54_____
e. 55-64_____
f. 65 or more_____

14. What plans do you have for the future management of your dairy herd? (Including 23 practices listed earlier plus any others mentioned.)

_____
_____
_____

15. (If respondent says he has no plans in question 14 above, ask why not.)

_____
_____

15. What land use system did you follow last year?

Crop	Acres	Bottom or Upland	Yield	Disposition Used	Disposition Sold
Corn (grain)	____	_____	____	____	____
Corn (silage)	____	_____	____	____	____
Grass (silage)	____	_____	____	____	____
Kind_____	____	_____	____	____	____
Hay:					
Kind_____	____	_____	____	____	____
Kind_____	____	_____	____	____	____
Kind_____	____	_____	____	____	____
Pasture(improved)					
Kind_____	____	_____	____	____	____
Kind_____	____	_____	____	____	____
Kind_____	____	_____	____	____	____
Supplemental:					
Kind_____	____	_____	____	____	____
Kind_____	____	_____	____	____	____

17. How many dairy animals in each of the following classifications did you have last year?

	Total	Registered	Grade
a. Dairy cows milked			
b. Dairy heifers over 1 year of age			
c. Dairy heifers under 1 year of age			
d. Dairy bulls			

18. How many dairy animals in each of the classifications did you have in the following breeds? (Check with question 17 to see totals are the same.)

	Number of Cows		Number of Heifers		Number of Bulls	
Breed	Regis.	Grade	Regis.	Grade	Regis.	Grade
a. Brown Swiss						
b. Guernsey						
c. Holstein						
d. Jersey						
e. Other (please specify) _____						

19. Do you now have more, the same or fewer dairy cows than you had last year?

a. More_____ i. How many more?_____ ii. Why?_____

b. Same_____ i. Why?_____

c. Fewer_____ i. How many fewer?_____ ii. Why?_____

20. How do you breed your heifers?

a. Artificially_____ b. Naturally_____

21. What type bull do you use on your heifers?

a. Dairy_____ b. Beef_____

22. What type of bull do you use on your cows?

a. Dairy_____ b. Beef_____

23. What percent protein do you use in your dairy ration?

a. 12%____ b. 14%____ c. 16%____ d. 18%____ e. Other(specify)____

24. Do you mix your own concentrates?

a. Yes_____ b. Some_____ c. No_____

TO INTERVIEWER: If the answer to question 24 above was Yes, skip to question 26. If the answer was Some or No, ask question 25.

25. If you do not mix your own concentrates, how do you provide for them?_____

_____

26. Do you grind your hay? a. Yes_____ b. No_____

TO INTERVIEWER: If the answer to question 26 above was Yes, ask question 27. If answer was No, skip to 28.

27. Please explain how hay is ground and fed._____

_____

28. What type of hay do you usually feed?

a. Legume_____ b. Grass_____ c. Legume-grass_____

29. How do you supply salt and minerals?

a. Mix in ration____ b. Supply them free choice____
c. Other (specify)_____

30. What source(s) of water do you have for your herd?

a. Drinking cups in barn____ b. Other water in barn____
c. Water outside barn____ d. Pond_____ e. Stream_____

31. If you have a pond, what distance is it from the barn?_____yds.

32. If you have a stream, what distance is it from the barn?_____yds.

33. What type of milking set-up do you have?

a. Stanchion____ b. Elevated stall c. Other (specify)_____

34. Do you have a bulk tank?

a. Yes_____ b. No_____

35. If you have a bulk tank, what is its capacity?_____gallons

36. Do you have a pipeline system? a. Yes_____ b. No_____

37. If you do have a pipeline system, does it include a workable weighing device?

a. Yes_____ b. No_____

TO INTERVIEWER: If the answer to question 37 was Yes, ask question 38. If No, skip to question 39 below.

38. Do you use the weighing device?

a. Yes____ b. No____ If not, why not?_____

39. How much loafing barn area do you have for each cow? (in sq. ft.)

a. Under 30____
b. 30-39____
c. 40-49____
d. 50-59____
e. 60-69____
f. 70 or above____
g. Box (free) stalls____

40. Do you have a silo? a. Yes____ b. No____

TO INTERVIEWER: If the answer to question 40 is Yes, ask question 41. If No, skip to question 42.

41. What type(s) of silo(s) do you have? What size? What type of cover to you use?

		Type of Cover			
Type of Silo	Size	Roof	Plastic	Other	None
Upright ____	_____	____	_____	_____	____
Trench ____	_____	____	_____	_____	____
Bunker ____	_____	____	_____	_____	____

42. Who does the milking?

a. Owner_____ b. Tenant_____ c. Other (please specify)_____

43. If person other than owner milks, how is he paid?

a. Percentage____ b. Salary_____ c. Combination (specify)_____

44. (OPTIONAL) Approximately what was your total (gross) family income last year? (Hand card to respondent and ask him to select a category.)0

a. 0-1999_____
b. 2,000-3,999_____
c. 4,000-5,999_____
d. 6,000-7,999_____
e. 8,000-9,999_____
f. 10,000-11,999_____
g. 12,000-13,999_____
h. 14,000-15,999_____
i. 16,000-17,999_____
j. 18,000-19,999_____
k. 20,000-21,999_____
l. 22,000-23,999_____
m. 24,000-25,999_____
n. 26,000-29,999_____
o. 30,000-49,999_____
p. 50,000-99,999_____

45. How would you rate the present condition and value of your dairy herd?

a. Excellent_____ c. Fair_____
b. Good_____ d. Poor_____

Name of Respondent_____

Address_____ County_____ Number_____

Date_____ Tenure Status_____

HW
T-99